ALSTON.

ALSTON MOOR:

ITS PASTORAL PEOPLE: ITS MINES AND MINERS;

FROM THE

EARLIEST PERIODS TO RECENT TIMES.

BY

W. WALLACE.

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PREFACE.

The object of the following pages is to give, in a handy form, information relating to the Pastoral People, and to the Mines and Miners of Alston Moor, the chief portions of which exist only in expensive county histories and unpublished manuscripts. For the information relating to the Manor of Alston, and to the quantities of lead produced from the mines in ancient times, I am greatly indebted to Hodgson's History of South Tynedale. His statements bearing on the mines have been carefully sifted, and I trust this part of the work will prove interesting to readers generally.

The portion on the origin of metals is the result, in a condensed form, of much labour and careful observation, in the mining districts of the North of England, during many years. It is hoped that, in connection with the facts given in my book on the Laws which Regulate the Deposition of Lead Ore, &c., the propositions in this volume will aid miners in the selection of objects for speculation in the veins of Carboniferous rocks. In connection with chemical science they may be regarded as *instantiae crucis*, pointing the way to Truth's portals, through which, by future labours and researches, entrances may be obtained leading to her inner chambers. This will be accomplished when the laws, by which metals are evolved and formed near the earth's surface, are demonstrated by chemical

analysis,—the great problem which awaits solution, and which, when solved, must affect chemical theory, and narrow the basis on which this important science rests.

In order to make the different subjects clear, a few repetitions were found to be unavoidable. Every care has been taken to ensure correct statements of facts and dates; though in a work of this character, a total freedom from error cannot be anticipated.

Circumstances over which I possessed little control have delayed its publication for several years. Recently a few notes have been added before it was sent to the press.

It only remains to acknowledge debts of obligation to friends who have kindly aided in passing it through the press, and who have given information of comparatively recent events.

Battleborough,
Appleby.

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THE PASTORAL PEOPLE.

At what period of time, and by what race of men, the valleys at the head of the Tyne river were first occupied, are questions that cannot be satisfactorily answered. 'Time antiquates antiquities,' and as we pursue our investigations into the past, the twilight deepens into darkness. When there are no written records, no traditional lore, nor even a relic of the past on which to base an opinion, the imagination frequently takes wing, and things are fancied into being or caused to vanish into nothing to suit preconceived notions. Though these creations are airy unsubstantial dreams, yet by the lapse of time and frequent repetition, ultimately they come to be regarded as certainties.

That a race of men roamed over and probably hunted wild animals in these valleys at a very remote period, appears certain. I have in my possession a polished stone hatchet, found about two or three feet below the surface, in a bed of pure clay, a little below

West Nenthead, and about 1400 feet above the sea level. After a careful examination of the district, I formed the opinion that the clay had been deposited in a sheet of water formed by the blocking up of the Nent river by a large landslip, a little above Guddam-gill Burn. A cottage or farm house, called Strellers, is built upon this slipped ground. The landslip had moved down the mountain side about one-quarter of a mile, and had brought the firestone and coal seam above it into the position which had been occupied by the Four-fathoms Limestone, or a perpendicular fall of about 360 or 370 feet. This landslip has evidently taken place at a very remote period of time. The Nent river has cut a channel through it, but above the slip it has not yet regained the depth of the old channel. It would appear that in this tarn, or sheet of water, the hatchet had been lost, and buried in the deposit of clay from the muddy water which flowed down the sides of the mountain during floods. Some implements of flint have also been discovered below the peat on the top of the mountain which lies between the East and West Allen river.*

* "There is some valuable information obtained of the presence of man at a remote period from the occurrence of flint flakes and implements beneath the peat on the range of hills forming the Penine chain. These have been

It is probable, however, that there was no settled population in Alston Moor in pre-Roman times. There is only one tumulus, called Mt Anthony's Chair. It is situated on the boundary between the district and the Manor of Haskew. There are no Druidical temples or other ancient British remains similar to those found scattered over the vale of the Eden. No British camps or places of sepulture are denoted on the ordnance maps. Had a resident people occupied the country at this remote period, shut up and isolated from other tribes by the surrounding mountains, it is certain that they would have left some remains of their existence. The population of Britain, at the period of the Roman invasion, has been estimated at 760,000.† With

found on the surface of the ground at the base of the peat, often 10 or 12 feet in thickness. On the same horizon are the roots and trunks of great trees which grew and flourished either before the peat gained a footing, or during its accumulation. The great trees which almost universally flourished over the highlands, now capable of supporting only heather and grass, probably indicates a climate much warmer and milder than the one at present existing . . . it is difficult to imagine great trees growing luxuriantly on the storm stripped heights of these hills"—*Pre-Roman Yorkshire*, by J. W. Davis, F.G.S.

I remember once seeing the stump of a large tree with its roots spread out in the clay, from which the peat had been washed away. The situation was a very exposed one on the Crossfell mountains. It would be impossible to rear a forest in such a situation at the present time.

† At the close of the Anglo-Saxon period England is supposed to have contained 1,800,000 people.

such a small population huddled together in tribes for defence, a great portion of the island must have been uninhabited, and only the best land would be selected for grazing and tillage. It is improbable that they would occupy the barren and cold valleys encompassed with high mountains in preference to the more fertile parts of the country. Mr. Hodgson says that Gerard's Gill [Garrigill] "probably like Alden's Town [Alston] had its pronomen from its founder [and both names are Saxon]. Centuries, however, before it assumed its present name, and without any temptation to underground wealth, the fertility of its river-side soil had tempted a pastoral people to settle permanently here. Descendants of the Sythian Cymry, under the denomination of Picts and Wallises." Further on we may be able to make a few suggestions relating to the people who first settled permanently in the district and the time of its occurrence. According to Bede, the Picts arrived from Scythia (modern Denmark or Jutland) in the northern parts of Britain, about the year A.D. 270, at least they were never heard of before this date. Ritson says "those ferocious invaders were the inveterate enemies of the indigenous inhab-

itants [of Scotland] whom they instantly attacked, defeated, and drove out of the country; which, by the way, may be fairly inferred to have been rather thinly peopled, as we well know that the Caledonian Britains had been nearly exterminated by the Romans under Julius Agricola not two centuries before, having in that final and fatal engagement, so eloquently described by his son-in-law [Tacitus], lost ten thousand men! a loss they had scarcely been able to repair. . . . In 842 the Picts were almost entirely destroyed by Kenneth MacAlpin, or King of the Scots. In 937, Athelstan conquered the northern barbarians at Bamburgh. After this date the Picts are never more mentioned in history, and their language was entirely forgotten."* It would appear, however, that a great number with this name were killed at the battle of the Standard in 1138. They might, however, be a different race of men occupying the country of the Picts of more ancient times. If a remnant of them existed, as Mr. Hodgson says, in the upper part of Tynedale about the time of the Conquest, it is remarkable that they should have left so little trace of their language in the dialect spoken

* Ritson's Annals of the Picts.

in Alston Moor, nor any remains of their existence in the district. In the opinion of Mr. W. Bainbridge (who I believe had studied the subject carefully), up to a recent period the Alston dialect was the purest Saxon spoken in Britain. The names of the minor streams of the district frequently have two designations, which may indicate two races of men; as Crossgill Burn, Clargill Burn, &c. Gill and Burn have the same meaning, the former would be used by the Picts, and the latter by the Anglo-Saxons. I believe the word Nent means a small river. If the Picts took possession of Alston Moor, it could only take place after Whitley Castle station was abandoned by the Romans. It was probably after this event that the country was first occupied by a *resident* population.

That a pastoral people had settled in the country at an early period in Saxon times there can be little doubt. On each side of the Tyne river, in the Chapelry of Garrigill, and probably below Alston, and to some extent on each side of the Nent, an earthen wall and ditch were made, at some remote period, evidently to protect the low lying land from the cattle during the summer months, and to enable

this pastoral people to obtain a supply of hay and rough grass left uncut for winter consumption. Judging from the remains of some portions of this wall and ditch it must have been a very important and effective fence.*

It appears to have formed the outside boundaries of the ancient tenements or shieldings. It is probably *the dyke* mentioned in an extract from the Drift-roll of Alston, by Mr. Nansen. "Item.—date 1597.—The Tenements of Nether Cragge shall drive over at the foot of Guddergill and so to Lortburn, and so to the Black Syke, and so to the ffell. And in Winter in ffrost and Snow to drive over Tyne through the head of Richard Renwick ffield, and when he breaks the Dyke every year to pay fourpence."† If we suppose this dyke was constructed at a considerable period before the Conquest by Saxon settlers, the fells on the upper side of it would be called *Folkland*—that is no man's land, but land that belonged to the nation; and after the Conquest *King's land*. The land enclosed by the *dyke* would

* Traditions relating to the importance of this fence were in existence in Garrigill 60 or 70 years ago.

† Transactions of the Cumberland and Westmorland Antiquarian Society. Vol. 8, part 1.

be called *Common land*—held as separate property, not by single owners, but by the community settled in the district; that is the property remained in the corporate society, as we may call it in modern language, while the use was allotted by common authority to its members.‡ The boundaries of the allotments in the *Common land* were, it is certain, marked with mere stones, or a green bank of turf, and remaining in the same family gradually became *Yrfe-land*, that is land owned by descent, but not saleable. It is not improbable that the land was occupied in this manner with some additional changes to facilitate the sale of the holdings to kinsmen for centuries after the Conquest, probably with no written title, but evidenced by witness of their neighbours, at periodical Folkmote meetings, held in the open air at Hall Hill, which was in the district called Amotshalth, and that they paid dues and services to the community and to the King of Scotland. Whether their rights were forfeited at the time of the Conquest (as it appears to have been the case in some manors in Tynedale), and afterwards

‡ See an interesting work on the Land Laws by Professor Pollock—Page 20.

confirmed to the tenant by drengage—that is, restored to the owners by King William, is not known.

After the Conquest the franchise of Tynedale was composed of the parishes of Alston, Kirkhaugh, Whitfield, Knaresdale, Simonburn and part of Haltwhistle, and formed one estate in England, owned by the King of Scotland, and for which the Scottish king had to do homage to the King of England, who reserved all his rights to the minerals; but the King of Scotland collected all taxes for his own use, and exercised all civil jurisdiction.

About the year 1209, the Alston estate was granted by William the Lion of Scotland to William de Vetriponte, one of the Norman vassals which Henry, Prince of Scotland, had settled in Berwickshire. William de Vetriponte married Maud, sister of Hugh de Morville, who was one of the knights that murdered Thomas á Beckett, in the reign of Henry II., in 1172. She had Maud's Meaburn for her portion. He had two sons Ivo and Robert. The Lordship of the Barony of Westmorland was granted to Robert, who it appears "was a man of great parts and employments, and was entrusted with the custody and disposal of much of the king's treasure."

In 1209, the Pope excommunicated King John; in consequence he made peace with the Scots who did him homage, he likewise caused all his vassals to render homage. He confirmed the grant of Tynedale, namely, Arlington, Aldenstone and Kirkhalgh, with their just appurtenances, to Ivo de Vetriponte, by a charter dated at Bristol, May 10th, 1209.

It is evident that Ivo's son Robert heired his father's estates. In 1280, he was called upon to prove his titles to a franchise of the King of England, in consequence the King of Scotland had to support his title to the liberties of Aldenstone as royal prerogatives. No documentary evidence, but only immemorial usage could be produced to support the King of Scotland's claim, and the jury gave a verdict against Robert's title to the estate.

Robert's death must have taken place soon after, for, at the instance of the King of Scotland, the estates were restored, by a charter granted by Edward I., in 1282, to Nicholas de Vetriponte, Robert's son, to be held by him of the King of Scotland. There was another trial in 1292, at Carlisle, under a *quo warranto*, which ended unfavourably to the claims of Nicholas. The king,

however, reversed the judgment, and it was confirmed to Nicholas by a writ of the king, dated at Newcastle, January 9th, 1293.

"In 1315 it was found by an inquest after the death of Nicholas de Vetriponte that he held a capital messuage in Aldreston with 14 acres of arable and 100 acres of meadow ground; had 33 tenants at Gerrardsgill, who held 33 shieldings, and paid £5 18s. yearly rent; 13 tenants at Amotes halth,* who paid yearly £3 8s. 4d.; 22 tenants at Nent and Cobrig-gate, who had 22 shieldings, and paid £5 2s. rent; also one water corn mill, and one fulling mill, and 3000 acres of pasture in Aldreston Moor, all of which premises were held of the Manor of Werk, and that Robert de Vipont was *his son* and heir.† At this period the pound contained about £3 7s. worth of gold, consequently the total sum paid yearly for these lands and shieldings amounted to about £48 5s. It would appear that at this period the pastoral population in Alston Moor was very small. Altogether there was 68 tenants, which might form a population of 500 or 600 persons, male and female. There are no means of ascertain-

* Halt—Anglo-Saxon for a coppice. † Hodgson's Tynedale.

ing the number of people employed in the mines at this period, or who lived in the town of Alston, the existence of which is never alluded to in these early documents.

"The Alston estate descended from Robert de Vipont to his sisters, Elizabeth, wife of Thomas Blencowe, and Joan, wife of William Whytlawe, where a link or two of the family pedigree is wanting to connect it with Thomas Whytlawe, who in 1443, according to Nicholson and Burn, granted the manors of Aldston, Ellerington and Gerrard's Gill to William Stapleton and Margaret his wife, of Eden Hall, whose daughter Mary carried Alston by marriage to the Hiltons of Hilton Castle, in the County of Durham, who in 1618 sold it for £2500 to Sir Francis Radclyffe, of Dilston, Baronet. After the attainder of his descendant James Radclyffe, third Earl of Derwentwater,"* and the death of his son John in 1729, the estates were in possession of the Crown for a few years, but were settled on the Greenwich Hospital, on the 15th May, 1735.

It appears, however, from a monumental brass in

* Hodgson's History. Mr. Sopwith says the estates were sold in 1629.

Edenhall Church that the Stapletons heired the property from the Vetripontes. The inscription is as follows:—"Hic jacet Willms Stapilton armig' quodam dns de Edenhall qui obiit xxvi. die Augusti A° dni MCCCC° lviii. Et Margareta uxor ejus que erat filia et heres quodam Nicholai de Vet'ipont' & dna de Aldeston mor. Quor' aiabs ppiciet' Deus." Was this Nicholas the son or grandson of Robert, or a descendant from a younger son of Nicholas de Vetriponte, who died in 1315?

Prior to 1611 and 1618, the lands in Alston Moor were mostly copyhold tenure. At these dates they were leased off by Henry Hilton, Esq., to the tenants for 999 years. There are about 23 tenements denoted on the manorial maps in the Ameshaugh district. It would, therefore, appear that before 1611 there had been subdivisions of the old shieldings, or additions made to them from the common land. For it is evident that the shieldings of Amotshalth—or as it is written on the old maps, Ameshaugh, and on Speed's map of Cumberland (1610) Emshaugh—comprehended the enclosed land, situated on the west side of the Tyne and between Blackburn and Gilderdale Burn. I am inclined to suppose Arne-

show, where the judges came to, is the same place as Hall Hill in this district, though it is possible it might be in the franchise of Hexham. Howe means a hill in Teutonic or ancient German. It was formerly traditional in Alston Moor, and may be so still, that a charter of privileges was obtained long ago for a proposed town to be built at Emshaugh. Probably no charter was obtained ; but the tradition may be connected with the fact that the most important business of the community was transacted in this ancient division of the manor. Mr. Nanson says that "Hall Hill is not far from the farm of Mark close, and that it stood within the limits of a wide enclosure, now divided into small fields, which was known as the Mark close." "It was probably a common pasture, which being public property had to be fenced by those whose lands adjoined it, and within which, upon the Hall Hill met the Mark moot, the old assembly of primitive mark or township, before the causes which transformed the mark into the manor had come into operation." The following is one of the entries in the old Drift-roll of the manor, "That the tenants, that joyne upon the Mark close make up their part [of the fence] that

joynes upon the same upon the payne of IIIs. IIIId. at the discretion of the fence men." What were the duties these fence men discharged, were they appointed to look after the fence which separated the fell lands from the inlands ?

The thirty-three shieldings which composed the district of Gerrards Gill corresponds closely with the number of tenements enfranchised by the Hiltons. It is also evident that the boundaries of this district were the same as they are at the present time, with the exception of the Priorsdale portion, which is now, and might be then, included in the parish of Garrigill and in the chapelry for ecclesiastical purposes. This district comprises the portion of the manor lying between Nattras Gill and Blackburn and the north boundary of Priorsdale.

It was in Gerrard's Gill that Mr. Hodgson says that the Picts and Wallises were settled at an early period. I suppose the Wallises were Cambrians or ancient Britains, who, according to Julius Cæsar, had made some progress in civilization before the invasion. As we have already pointed out, there are no facts even to support a conjecture that they occupied Alston Moor as a settled people before the

invasion of the Romans, or during their occupation. They might, however, in small numbers, frequent the country as hunters before and after the Romans left. The ferocious Picts also possessed some amount of civilization; they buried and did not burn their dead. They used drinking glasses and made darts or javelins and lances, and occasionally rode in chariots.* If the Picts did inhabit Garrigill as a settled people, it is remarkable that no remains of their glass vessels, &c., have ever been discovered, nor even their places of sepulture; and it is improbable that the Picts and Wallises would live harmoniously together. The dialect of the inhabitants and the little information we possess as to the habits of the community in ancient times, I think indicate that the ancient shieldings and the important fence or fences were made by the Saxons who settled in the country long before the Conquest.

From the memorial rolls it is clear that watches had to be kept as a precaution against Scottish raiders. When I was a boy my grandmother used to tell me stories of the olden time. Most of these I have forgotten. One, however, I well remember

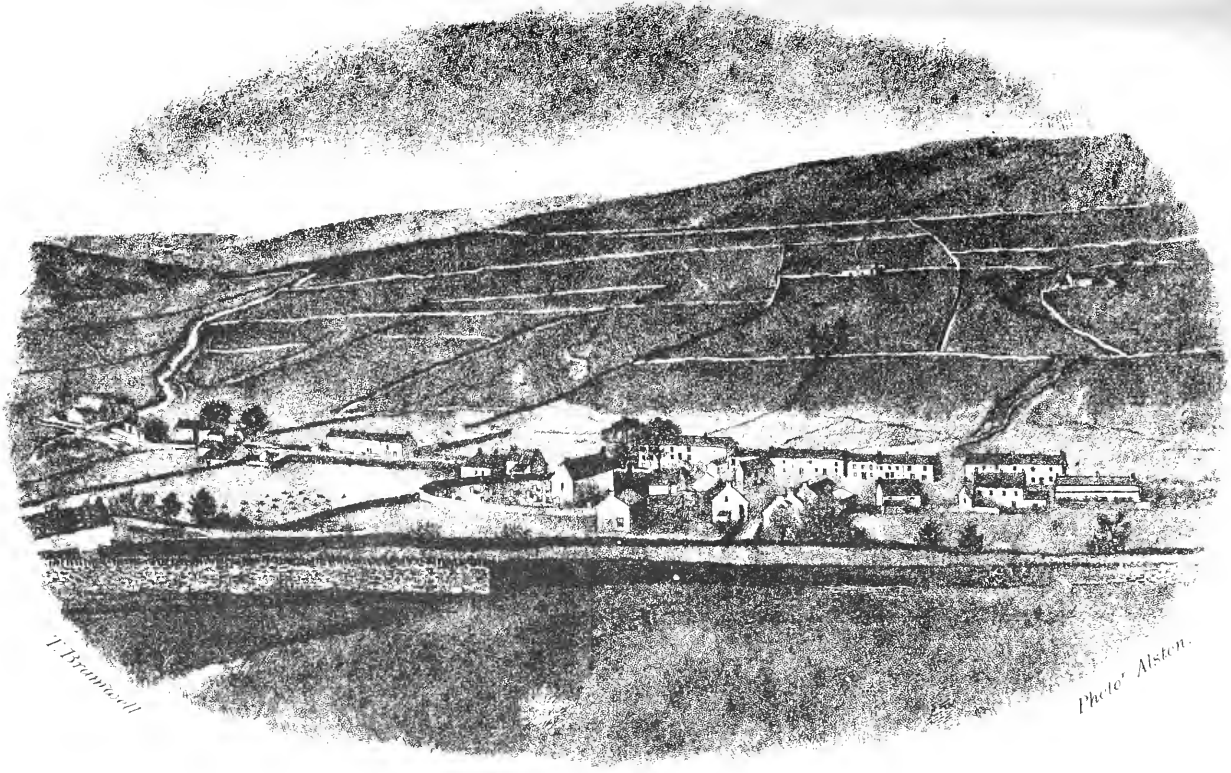
* See Ritson's Annals of the Picts, page 120.

was, that during her grandfather's time, the family was careful to arrange axes and other weapons at the head of their beds, in order to be in readiness to defend their property against the Scotch. The family were living at Annetwalls in 1726, and how long before that date I have not ascertained. The country was in a very unsettled state about the time of the rebellion of 1715.

Respecting the social state of the inhabitants in past times, history is silent. In county histories the principal subjects are the castle, hall, and the church—the lord, the squire, and the parson, and all that pertains to them. Of the manners and customs of the common folk—the working bees of the community—and things relating to their struggles for existence, they give us very little information; and now it is probable that many written records formerly in existence have perished. Mr. Nanson's recently published article on the Alston memorial records is a very interesting exception. Many of the items in the rolls he only alludes to; but from those given it is evident that the inhabitants possessed a great amount of home rule or self-government.

It was only in the beginning of the present century that Garrigill parish was connected with Alston in the administration of the poor laws. Each division of the manor collected rates sufficient to defray the cost of keeping their own poor. After this union the Garrigill people were more heavily rated; and for a long time after they regretted that they gave consent to the union. Formerly, the inhabitants of Garrigill entertained a kind of horror of the '*Puir House*,' and it was considered a disgrace to a family for any of their relations to be sent there. In consequence, the poor rates were probably low.

The old people living formerly in Garrigill frequently said, that in former times there was a closer connection between the parish of Garrigill and the parish of Kirkland than with the parish of Alston. What this connection consisted in or how or when formed, I have never been able to learn with certainty. It is, however, very remarkable that the dead were carried from Garrigill to be interred at Kirkland. I was once informed by Mr. Thomas Millican, who was the agent for Messrs. Fydell and Tufnell's Tynehead Manor, that a corpse was taken from Garrigill, in the depth of winter, to be interred at Kirkland. The



GARRIGILL GATE.

funeral party was overtaken with a snow storm, and had to return home to save their lives, leaving the coffin on the top of Crossfell, where it remained for a fortnight. When the storm subsided they brought the corpse back to Garrigill and buried it in a piece of glebe land. The Bishop of Durham having been informed of this circumstance, ordered a portion of the glebe land to be walled in, and then came and consecrated it for a burial ground. I suppose this happened about the middle of the seventeenth century, or a few years later. Mr. Millican also informed me that, for some years after this event, the registers of baptisms and deaths were written on slips of paper, and were put through an opening into a box, kept at the Fox Inn. The box was occasionally opened by a clergyman, and the registers sent to Durham. In recent times, and probably in the olden time, the marriages were celebrated at Alston. The '*weddeners*,' often a considerable number, rode on horseback, and there was often much hard riding back to Garrigill. This very remarkable circumstance of the pastoral people in Garrigill parish burying their dead in Kirkland parish, may throw some light on the question why Alston Moor is in the County of

Cumberland. "The division of the kingdom into counties, which, in common with many other of our earlier institutions, is commonly attributed to Alfred, though it was probably of a date far anterior, was in ancient times, chiefly of use in marking the limits of different jurisdictions. To each county belonged a county court, which it was the duty of the thanes and other freeholders to attend and do suits at; though it seems the thanes only took part in the administration of justice."* Had the county boundary been fixed by royal authority, it is not probable that a portion of upper Tynedale would have been assigned to Cumberland, unless circumstances rendered it imperatively necessary. Naturally it forms a portion of Northumberland.

It would seem probable that the Anglo-Saxons, who formed the fell-side village communities on the west side of the Crossfell range of mountains, took possession of the fertile land on the banks of the Tyne river for summerings for their flocks of sheep and cattle, and that shepherds resided in '*shelis*' to attend to, and protect their flocks from wolves, &c., until the autumn. A portion of one of the

* Brand's Dictionary. Art. County.

principal streams in Alston Moor is called Shield Waters, and a number of farm houses are called Shields. This migratory population would be subject to the county jurisdiction connected with their principal place of abode. Gradually residence in these shields would become permanent, the population still claiming the protection of the ancient county courts to which they had been accustomed. Whether they displaced the Picts or the Wallises, or amalgamated with them, is not now determinable. There were probably very few, if any, of these ancient people. The desire to be interred at the place of sepulture of their fathers is a natural one, and sufficiently accounts for the practice of the pastoral people of Garrigill parish to continue burying their dead at Kirkland, from very remote periods of time. It does not appear to me to be improbable that, in Saxon times, the inhabitants of Alston parish also buried their dead on the west side of Hartside. The erection of a church in connexion with a burial ground, probably after the time of the Conquest, would gradually occasion the abandonment of this custom.

It may now be pointed out that the parishes of

Alston and Garrigill do not comprehend the whole of the upper part of South Tynedale. The manors of Kirkland with Skirwith, Ouseby and Addingham extend considerably beyond the heavens water division which separates the vales of the Eden and Tyne. Further north, the manors of Heskew and Renwick extend only to the heavens water division. It is probable that this portion of Tynedale, at least, was a portion of Cumberland when in 800 it was comprehended in Strathclyde and Galloway, then called Cumbria—a kingdom of the ancient Britons which ended in 945, after having been in existence 600 years. The whole of this kingdom was granted by Edmound the Anglo-Saxon king to Malcolm, King of Scotland, as a feudal benefice in the strictest sense—that is, he should be his ally both by sea and land.* It would, therefore, seem probable that this portion of South Tynedale was then in possession of the village communities of Kirkland, Ouseby and Gamblesby; and that the North men had taken possession of these villages before the grant was made to the King of Scotland in 945. The first body of Saxons arrived in Britain

* See Ritson's Annals of Cumberland, page 205.

in 449, and in 547 they had established themselves in the kingdom of Northumberland which comprehended Northumberland, Cumberland, Yorkshire, Westmorland, and Lancashire. Soon after the last date they had probably settled in the parishes of Alston and Garrigill, where they were not much interfered with by the Danes when, in 800, they broke up the great kingdom of Northumberland.† If the Picts came into Scotland about 270 or 296 from Norway, as some antiquarians suppose, and if, as Mr. Hodgson affirms, they and the Wallises occupied the dales of South Tynedale, it would account for the Gill and Burn being united in the name of small streams to which we have previously alluded. The occupation of the dales of South Tynedale *may* have taken place by the different races as follows.

1. By a race of men who used stone implements at a very remote period, and probably when the climate was milder than at the present time.

2. By the Cymbri as a hunting ground, who have left no remains of their existence.

† It is remarkable that the word Beck, as the name of a small stream, does not occur in Alston Manor. It, however, occurs thrice in that portion of Tynedale, included in the manors of Ouseby and Addingham.

3. By the Picts and Wallises, after the Romans abandoned Whitby Castle. (?)

4. By the Anglo-Saxons. The first *settled* community in the district.

5. By the Normans as property without displacement of the Saxon population.

Hunder Bridge, or as it is now called Hundy Bridge, in Gerrard's Gill, did not belong to Nicholas de Vetriponte. It was granted by Hugh de Applebi Clerk to Laurence de Vetriponte. The date of this grant is not given by Hodgson. The name of Hugh de Applebi does not occur in the list of the Rectors and Vicars of St. Laurence and Bongate, Appleby. Henry de Applebi held the living of Bongate in 1339. Nor are we informed how Hugh de Applebi obtained possession of this portion of Alston Manor. The grant to Laurence de Vetriponte was confirmed by Nicholas de Vetriponte, who died in 1315. It is possible that this portion of the manor had become Bok or Bookland, and had descended to Hugh de Applebi from Saxon times. It was held by William de Vetriponte by homage to Robert, son of Nicholas. On the 30th August, 1566, it was conveyed by Richard Vipont (probably a descendant of Laurence,

the grantee under Nicholas) to Edward Musgrave, who transferred it to Layton. During the latter part of the last century only the Lowhouses portion of this estate belonged to Mr Ricardson; considerable portions of it had been sold to different persons. Nearly all of them, however, passed into the possession of the Greenwich Hospital by purchase from the owners. Lowhouses was the Old Manor House. It was rebuilt nearly sixty years ago. Mr. Ricardson had a private road through the estate on the line of the present Garrigill and Alston road. Before the Earl of Carlisle and Co. obtained a grant of mining ground from the Greenwich Hospital, an agreement was made with Mr. Ricardson, who possessed all the manorial rights. The Earl of Carlisle and Co. obtained a grant of the minerals of this estate from Mr. Ricardson, and they made a level from Crossburn on the top of the Scar limestone, which extended nearly to the Alston and Garrigill road for proof of Hundy Bridge Vein. This level was propped and lined with fine oak timber, brought on the backs of ponies from the Earl's estates in Cumberland. This estate comprehended all the district between the Tyne river

and the Old Fell dyke, and between Crossburn and Garrigill Burn. There is a small portion on the west side of the Tyne which gave the estate the right of pasturage on the common land on the west side of the Tyne river.

The number of shieldings and tenants in the Nent and Corbrig-gate district at the time of Nicholas de Vetriponte's death, does not differ much from the number of tenements leased off by Henry Hilton, as shown upon the old maps of the district.

In the above list there does not appear to have been any shieldings in the Alston district, between Nattras Gill and the Nent river. It is probable that the freeholds near Alston Town had, by some process, become book lands in Saxon times, and, in consequence, were less affected by the introduction of feudalism than the folk lands after the Conquest. Sometimes a free and absolute ownership was conferred by the terms of the book on the person on whom the grant was made; in some cases homage, or service of some kind, was exacted. "As early as the eighth century, grants were made recklessly out of folk land in the North of England to persons who professed the religious character merely to have the

grant without the burden of the ordinary secular dues and services."*

Priorsdale is a large portion of the Manor of Alston, called Presdale in ancient times. It was given by Ivo, son of William de Vetriponte, the original grantee, to the Priory of Hexham, to be holden in '*frank almoigne*' or free lands of him and his successors as of the demesne of that manor. Alexander II. of Scotland [1214-1249], and Henry III. of England [1216-1272], confirmed Ivo's grant. It would appear that the validity of this grant was afterwards disputed; for there was a writ issued against the Convent of Hexham for usurping a franchise belonging to the king. The pleadings were at Carlisle and afterwards at York, and they established the religious houses' title to the estate. The date of these assizes is not given by Hodgson. At these trials the Priorsdale estate was shown to consist of 92 acres of meadow and 2000 of pasture. At that period the acre was not a well defined quantity of land; the acreage of Priorsdale far exceeds these quantities. "The Black Book of Hexham contains an account of all the possessions

* Pollock's Land Laws, page 25.

of that house prior to the dissolution of religious houses; and under the title of 'The Liberty of Tindale, with Presdale and Aldenston Moor,' has a Latin description of the boundary of this estate, of which the following is an old translation: 'They hold also Presdale and its several [joint tenancy] at every time of the year; and if any shall depasture with any beasts at any time within the divided pasture of Presdale, he ought to be attached at the court of the prior and be justified. And it is contained within these divisions:—beginning under Esgillhead, sae heavens water divideth unto Edestone, and from thence to Burnhopehead by Hard Road, as the water divideth unto Burnpot Lane, and from thence to Crokit burne head, and from the same Crokit burne unto the water of the Tese, and sae from the entrance of Crockit burne into Tese ascending unto the top of Fiends Fell, and from thence directly to Wakestaneghe, and from thence unto the fountaine of Kekburn [Cashwell] wane, from thence to Crossgill head, and from thence, over thwart unto the east, unto Nunstones, and thence to Cokeley Fell, and from thence descending by Ellerburne even into the water of the Tine, and soe by

Tine unto Esgill foote, and from thence ascending by Esgill unto Esgill head first named.'"

The Priory and Convent of Hexham shared the fate of the monastic and religious houses in the time of Henry VIII. The dissolution was resisted with more pertinacity and courage than prudence.* And they seem even to have influenced the Earl of Bedford and one Downing to obtain a grant of Presdale from the Crown in trust for themselves, with the hope that the old order of things would be restored. Prior to that period they had leased the estate to George Lawson, Esq., who, in Elizabeth's reign, obtained a grant of it in fee, and whose son, Thomas Lawson, Esq., in Michaelmas Term, 1588, conveyed by deeds and fine four of the six ancient messuages of which it consisted to Arthur Jackson, Anthony Walton, Nicholas Walton, and Henry Renwick, and their heirs each to have one messuage. The other two messuages were conveyed to John Whitfield. Hill house

* Henry VIII.'s Commissioners met with opposition when they went "to take possession of the Monastery; they found the gates closed and the battlements lined with armed men, most prominent amongst the latter being a canon, the master of Ovingham—a cell belonging to Hexham; he stood on the walls in full armour, with a bow bent, with arrows, and to the summons of the Commissioners answered: 'We be twenty brethren in this house, and we shall die all or that you have this house.'"—Palmer's Tyne and its Tributaries.

was one of these messuages. It is not now easy to affirm where the other was located, probably at Sidehead. The Hill Liberty was in the possession of the Whitfield family in 1616. At that period they were owners of Randalholme estate, and Lords of the Manor of Kirkhaugh, which comprised the manors of Whitley and Ayle. Robert Whitfield sold the Hill Liberty to William Richardson, or Ricardson, of Nunwick Hall, at some date before 1670, and probably about 1664, when the boundaries of the Liberty were perambulated without let or hindrance. The Tynehead tenants had to perform suit and service at the Manorial Court of Kirkhaugh. In 1670 William Ricardson leased Sidehead and Dortgill to Ralph Archer of Tynehead for a term of 999 years. The conditions were £36 paid down at once, a rent of nine shillings per annum, and a twenty-penny fine every twenty-one years. By a deed dated 1st June, 1696, Ralph Archer assigned this leasehold property to Thomas Walton, Walton sold it to William Hodgson, who also purchased the freehold of his property. Lough Carleton, Esq., purchased or inherited (before or about 1788) the whole of the property from William Hodgson's

mortgagee, who I am inclined to believe was a Mr. Gill, the Lord of the Tynehead Manor, and whose name occurs in an old document relating to the mines. It is evident that the Richardsons parted with their Tynehead property long before they sold the Randalholme estate.

The property descended from Lough Carleton to three nieces, daughters of Thomas Carleton, Esq., Barrister-at-law, and a native of Longwathby. One of them died unmarried. One of the surviving sisters was married to F. S. Fydell, Esq., of Morcott, Uppingham, the other one to Mr. Tufnell. At the death of Mrs. Tufnell, her share of the property descended to her two sons, the Right Hon. Henry Tufnell, M.P., and Edward Carleton Tufnell, Esq. The former married the Hon. Frances Byng, youngest daughter of Field-Marshall Sir John Byng, G.C.B., first Earl of Strafford. Henry Tufnell had no sons, and his only daughter succeeded by the will of her father to his portion of Lough Carleton's property. At the death of Mr. Fydell in 1869, the other half of the property came into her possession. In 1870, Lieutenant-Colonel Alfrid M. Cranmer Byng married Miss Tufnell, and at the present time is Lord of the

Manor and also of the manor of Blencairn. Mrs. Cranmer Byng died at Quindon Hall, Essex, on the 31st January, 1887, leaving two sons and a daughter.

The two messuages conveyed to the Waltons form the Hole Liberty. The Tynehead messuage had come into the possession of the Lord of the Manor of Alston at some period previous to the attainder of the Earl of Derwentwater in 1715. In 1734 it was let to Josiah Archer for £16 per annum. At that time the Hole Messuage was in the possession of the Hopper family. In 1795, Nicholas Hopper was the owner. According to Hodgson, Mr. Burnett married the niece of Nicholas Hopper of Black Hedley, and at his death the estate descended to his son, James Burnett, Esq., of Ovingham. In 1851, Mr. Burnett's son or heirs sold the property to the Greenwich Hospital for the sum of £3300. The annual rent was £130 per annum, with £1 as rent for way leave.

Arthur Jackson and Henry Renwick's shares or messuages form the Eshgill Liberty: I have not been able to obtain any information respecting the changes of the ownership of this property; before 1820 it was in the possession of Joseph Dickinson,

Esq., of Dufton Hall, in Westmorland, and William Simpson. In November, 1821, Mr. Dickinson sold High and Middle Eshgill to the London Lead Company, and William Simpson sold Low Eshgill to the same Company in January, 1822. On the 31st December, 1883, the Eshgill Liberty was conveyed to the Nenthead and Tynedale Company.

Randalholme was an ancient Peel-house, situated on rich ground, near the confluence of Ayleburn with the Tyne. It has an heraldic tablet on the front with the motto '*virtute acquiretur honor*,' and the initials C.R.R., 1746. Surtess says that "Sir Bevis Bulmer, who was supposed to be a speculator in lead mines, died at the house of Mr. Whitfield, of Randalholme, in 1616. I suppose Sir Bevis resided in Durham. At this date he undertook to discover a gold mine on Crawford Moor, near the source of the Clyde, and when he died, he was probably on his journey to or from Crawford Moor. We have already pointed out that the family of Whitfield had possession of this estate at the above date, and were probably owners in 1588, when John Whitfield obtained possession of the Hill Liberty. As already pointed out, Robert Whitfield sold both

estates to William Richardson of Nunwick Hall, probably in 1664. In September, 1764, the Richardsons of Randalholme advertised several veins of lead ore within the Manor of Kirkhaugh to let, some of which had been wrought by the Governor and Company. This estate was sold to Joseph Salkeld, who, in 1828-9 (?) sold it to the Greenwich Hospital with the manorial rights of Whitley and Ayle, in the parish of Kirkhaugh, for the sum of about £9,500.

Mr. Hodgson apprehended that this estate was the Raynerholme, of which Robert de Vetriponte died seized in 1370, and that it was the capital messuage which Nicholas de Vetriponte had at Alston at the time of his death, in 1315. The contents of the estate were estimated at 14 acres of arable and 100 acres of meadow ground; it, however, far exceeds these measures. It was probably bookland in Saxon times.

Mr. Sopwith says that Randalholme Hall was "formerly the seat of the family of Randals, one of whom, William Randal Featherstonehaugh Ricardson Randal, is buried in the parish church." I do not know the source of Mr. Sopwith's

information. Undoubtedly the name of Randal was assumed.

Until the middle of the last century, or even to a later date, the country may be said to have had no roads—only rough stony tracks formed after the soil disturbed by the ponies' feet had been washed away. Old Thomas Pearson, of Tynehead, who was born in 1759, informed me that, since he could recollect, there was no road between Alston and Garrigill. People riding between the two places selected the hard ground on the undivided common. There was no road on the west side of the Tyne, from Garrigill to join with the Hartside pass. The road between Garrigill and Nenthead was made by the Lead Company, after they obtained possession of the Earl of Carlisle & Co.'s mines, in the beginning of this century, and the road from Garrigill to Howhill was made through the Lowhouses and Hundy Bridge freeholds, after the Greenwich Hospital had bought these estates. The road followed a private pony or cattle track, through the Hundy Bridge Manor or estate, which had existed from a remote period. The remainder of the road to Howhill was entirely new. Mr. Pearson informed

me that he could remember the introduction of carts into the country. They had thick axles and low wheels. I remember, when a boy, seeing a pair of these clumsily made wheels, the diameter of which was about two feet. Nearly everything was conveyed on the backs of ponies, except peats, which were brought down from the mountain in sledges. Peat was almost the only kind of fuel used in the country.* Alston Town was, however, supplied with coal from Gilderdale Head collieries.

The advantages that would result from better roads into the country was pointed out, in 1820, by Edward Hawke Locker, Esq., Secretary to the Commissioners of Greenwich Hospital, and the construction of the turnpike roads was principally promoted by them. They contributed £30,344 19s. 2d. towards defraying

* The cutting of peat moss into parallelopipeds of about 15 or 16 inches long is, I suspect, of comparatively recent introduction into Alston Moor. I form this opinion from the extent of ground from which peat has been cut to a depth of about one yard from the surface, on the principal places where peat has been obtained, and where the indications of its abstraction remain for a long period of time. Paring the surface in thin slices is probably very ancient, and might be introduced into the country by the Saxons, who used peat for fuel in lower Saxony during the time of Pliny (A.D. 23-79). The oldest certain account of turf, in the middle ages, is pointed out by Trotz, who says that it occurs in a letter of donation of the year 1113. Turbaria, for a turf-moor, is found in Matthew Paris, who died in 1259.—See Beckmann's History of Inventions. Art. Turf.

the cost. "The services of the celebrated Mr. MacAdam were put in requisition, and in the following four years considerable progress was made in constructing new, and improving portions of the old, lines of road. These extend from Hexham to Penrith, from Brampton to Alston, and from thence by the vales of Nent and Tyne, to Weardale and Teesdale. . . . One of the first fruits of the greatly improved state of the roads was the establishment of a post coach, which commenced running between Hexham and Penrith by way of Alston, where on the 26th September, 1828, a band of music and a large concourse of people assembled to witness the first public conveyance that had traversed this part of the country. In the following Spring the proprietors introduced a new and elegant four-horse coach from Newcastle to Penrith."* Had the district been purely agricultural, it is probable that the roads would not have been so carefully constructed. The railway to Alston was opened out on the 17th of November, 1852; in consequence, the coach soon ceased to run, and the carriage on the principal portion of the roads was greatly diminished.

*Sopwith's mining districts, &c. Page 9.

In 1830, as I can well remember, we paid tenpence for a letter brought by the post coach from Newcastle to Alston. Mr. Errington, of the Blue Bell Inn, carrier, was intrusted with many of the letters to and from Newcastle; I forget his terms, or charge. The advantages of cheap postage can hardly be appreciated by the present generation. They can only have a faint idea of the trouble and expense of forwarding letters to and from country places, previous to the introduction of the penny post, which came into operation on the 10th January, 1840.

The aspect of the country was to some extent changed by the division of the common, and the construction of the roads. The Act for closing the common was obtained in 1803. On the 19th February, 1819, John Fryer, William Donkin, and William Bates, the Commissioners, set out the private carriage roads over the common. Gilderdale common, which belonged to the land owners on the west side of the Tyne, between Black Burn and Gilderdale Burn, has been recently divided.

In ancient times the inhabitants were trained for war. The butts of archery had to be made before St. Helen's day (18th August.) The two places

where the butts were placed in Garrigill village green are still called High and Low butt hill. A part of Alston is called the Butts. So late as the reign of Henry VIII., in 1540, an Act was passed compelling all males, from sixteen to sixty, to receive military training in the practice of long bow, &c. Shortly afterwards Commissioners were sent into the country to report upon, and formulate lists of men able to bear arms. Nenthead is not shown on Speed's map of Cumberland (1610,) nor on maps of much later date. As a village, it did not exist before the middle or the latter part of the last century; consequently it is never mentioned in old records. Old Mary Hutchinson, better known as Mary Piper, who died in 1845, at the advanced age of 103, could remember the time when there were very few houses above Guddamgill burn.

That the country was more wooded in ancient times than at present may be safely admitted, particularly on sheltered situations on the sides of the mountains. The lands required for pasturage must have been open and in a great measure free from timber. Mr. Sopwith and Mr. Nall take it for granted that because a place is called a forest, it was, in

historical times, covered with trees. The fact is, these forests were hunting grounds on which few or no trees were growing, and were probably created after the Conquest. In Speed's map of Westmorland, dated 1610, Milburn forest is marked as extending to the summit of Crossfell, and comprehended the district lying between Trout beck and the Tees river. This district is also called a forest on Mordon's map of 1640. On these maps, Meldon forest, in Westmorland, is denoted near the summit of the mountain of that name, and Stainmore forest in the same county is denoted as lying above Hillbeck and on the east side of Roman fell. Upon Henry Overton's and Speed's map of the County of Durham, 1610, Teesdale forest is shown as extending on the north-west side of the Tees, above High force to Milburn forest, and another forest is denoted in Yorkshire as lying between Arngill beck and the Lune.* The only forest marked on Speed's map of Northumberland (1610,) is the forest of Lowes, situated on the north side of the Roman wall and opposite Haltwhistle. There was, however, a forest in Knarsdale upon which deer roamed, when Wallis

* A tributary of the Tees.

wrote the history of Northumberland, about 1750 to 1770. Mr. Thomas Beales, who had lived nearly all his life in Birkdale, and almost in the centre of the forests, situated at the head of the Tyne and the Tees, informed me that in his grandfather's time there were deer on the Westmorland fells. In a letter published in the "Gentlemen's Magazine" for 1747, and quoted in "Hutchinson's History of Cumberland," it is stated that there were several deer on the heights [of Crossfell.] Hutchinson, in a note, says that they could only be stray ones from Lord Carlisle's park. There can, however, be no doubt of the fact, that deer roamed over the Pennine mountains and did not totally become extinct until the middle of the last century. It is now certain, from experiments in planting, that a warmer climate than we have at present is necessary for the growth of trees in those exposed situations called forests, or at an elevation of from 1500 to 2900 feet above the sea, or perhaps on any other mountain in the North of England.

ON THE POPULATION.

We have already pointed out that the population of Alston Moor was probably a small one in the fourteenth century. In the time of Elizabeth, England and Wales were estimated to contain a population of four or five millions. The Acts of Elizabeth to restrain the building of cottages, and the severe laws enforced by her ministers against the idle and unemployed, prevented much increase of population. In consequence, during the long period between the death of Elizabeth, and the abdication of James II., it is supposed the population of England and Wales increased very slowly, probably not more than 500,000. It continued to increase very slowly, until about the middle of the reign of George III., when the population was estimated at 8,000,000, and in 1801 it was 10,942,646, in 1811, 12,609,864, in 1821, 14,391,631, in 1831, 16,539,318 for the whole island, exclusive of Ireland,* and at the census in 1881, 26,121,979 for England and Wales, and 3,735,573 for Scotland.

* Wade's History.

It appears probable that, as in other parts of the island, the population of Alston Moor increased very slowly from the period of the death of Henry VIII. in 1547 to 1735. In the seventeenth century Alston town must have been a small place. The late Mr. Robert Bainbridge, of the Loaning, once informed me that a considerable number of house sites were granted during the early period of the Radcliffe family's possession of the Manor.

In 1735 there were very few miners employed in the district, probably much fewer than at the beginning of the century. At the general letting on the 24th August, 1736, the number of miners which the lessees proposed to employ was 174 and 19 washers. In addition to these it was estimated that six agents, ten smelters, twenty carriers, eight smiths, four carpenters, eight wood fellers and leaders, eight peat gravers, leaders and hatchers, would be required,—making a total of 257 persons to be employed in the Manor. On account of the increased speculation in mining, the number of men employed, in connection with the mines, soon very considerably exceeded the above estimate.

The severe distress of the people in 1795 and 1796,

	1801	1811	1821	1831	1841	1851	1861			1871			1881		
							Inhabited Houses.	Uninhabited Houses.	Males.	Females.	Inhabited Houses.	Uninhabited Houses.	Males.	Females.	Inhabited Houses.	Uninhabited Houses.	Males.	Females.
Alston Town	3626	5079	4411	5244	4588	5672	397	48	787	913	355	56	705	811	330	48	623	737
County portion of Alston	...	...	...	...	...	...	220	28	590	628	206	25	561	550	176	19	455	473
Nenthead Chapelry ...	...	...	...	...	...	...	382	4	1035	1005	377	18	906	905	311	32	704	715
Garrigill Chapelry ...	1120	...	1288	1614	1474	1143	284	11	752	695	268	15	663	579	213	46	470	444
Totals	4746	5079	5699	6858	6062	6815	1283	91	6405		1206	115	5680		1030	145	4621	
Increase	...	333	620	1159	...	753	...	...	...		...	...	...		...	...	...	
Decrease	...	...	.....	...	796	...	...	410			...	...	725		...	...	1059	

and more acutely in 1800, determined the Government to ascertain whether the scarcity was occasioned by the increase of the population or by a deficiency of agricultural produce. The census taken in 1801 showed clearly that the population had increased and was increasing. The following table gives the number of people in Alston Moor at each census taken since that period.

Since the last census there has probably been a further decrease of about 600, making the population at the present time (1886) about 4,000. This estimated decrease was made by Mr. Dickinson, and is based on the returns of births and deaths.

In 1774, Messrs. Nicholson and Burns estimated the population of Alston Moor at 4,500, exclusive of the miners. Twenty-seven years afterwards, in 1801, it was only 4,746 with the miners. In 1811 it was 5,079; adopting the rate of increase between the two dates, it seems probable that the population in 1774, including the miners, was not more than 3,900. At this date, and for some time afterwards, a considerable number of miners from Allendale were employed in the Nenthead mines. At this period these mines were very rich and extensively worked.

The Allendale miners lodged in the mine shops during the week days.

In 1851 there were 3,435 males and 3,381 females; in 1861, 3,164 males and 3,241 females; in 1871, 2,835 males and 2,845 females; and in 1881, 2,252 males and 2,369 females. Taking into consideration the unhealthy occupation of mining, a greater difference in number between the males and females, than exists, might have been anticipated. Upon an average the proportion is 1 to 1.013, or there are thirteen more females than males in every one thousand of the population. Probably many of the young females leave the district as servants.

The decrease of the population in 1841 was due to the great depression in the lead trade, about 1830. Had the census been taken in 1835, it is probable that it would have shown a decrease greater than it did in 1841, for a recovery of prosperity in the lead trade had taken place between these two dates. In 1851 the population was nearly the same as in 1831. This census included an unsettled population employed in the construction of the railway to Alston. The decrease which took place during the following twenty years is due to the exhaustion of

the mines. Since 1871 the decrease is due to the exhaustion of the mines, and the low price of lead combined, which have occasioned the emigration of about 106 persons upon an average each year.

In Whellan's History it is stated that in 1851 there were 1,267 inhabited houses and twenty-eight uninhabited. One or both of these numbers must be wrong, for in 1861 there were 1,283 inhabited, and ninety-one uninhabited houses, or seventy-nine more than are given by Whellan; during this period very few were built. In 1871 there were 1,206 inhabited, and 115 uninhabited; from which it is evident that fifty-three houses had disappeared from the census list of 1871. In 1881 there were 1,030 inhabited and 145 uninhabited, showing that 146 houses had disappeared between these two dates—altogether 199 houses had been pulled down, or converted to other purposes. If we add these to the uninhabited houses in the census of 1881, we obtain 344 houses which have been vacated in twenty years. It may be pointed out that in 1861, five persons (very nearly) upon an average lived in each house; in 1881 only 4.5. Had the same number of persons lived in each house in 1881, as in 1861, the population

would have required 106 fewer houses. The losses sustained by owners of house property must have been serious, for where there are many vacant houses in any locality, rents must fall.

The cultivation of land on mountain-sides is a healthy occupation. The air is purer and more bracing on the hills than in valleys, crowded with population, and where manufactories of various kinds are established. Indeed, no labour can be more healthy than employment on a well managed grazing farm, where the sanitary arrangements are perfect—none more calculated to give strength and vigour to the constitution. It would appear that the climate of Alston Moor is favourable to health. Some instances of great longevity are recorded. At the festival held in Garrigill, to celebrate the passing of the Reform Bill of 1832, John Martin and his wife, (who wore her wedding dress), were placed at the head of the table. They were both in their 102nd year. Martin pronounced the grace at the tea tables, which were placed on the village green, and extended from the High butt hill to the Low butt hill. About 1,100 persons were entertained. The tea was provided gratis to all. Martin died in April, 1834, aged 103

years, and his wife, Mary, in November, 1836, aged 105 years. Ann Wilson, of Alston, died in 1765, aged 110 years. We have already alluded to Mary Hutchinson, of Nenthead, who died in 1845, at the age of 103. This age was on her coffin, but the Rev. Blythe Hurst supposed she was about 112 at the time of her death. She had vivid recollections of events which took place before the Rebellion of 1745. Thomas Pearson, of Tynehead, was nearly 100 years old when he died. Mary Lee, of Alston, who was baptized on the 21st of August, 1737, was reported at the time of her death to be about 100 years of age. It has been stated that John Taylor, who died in 1772, aged 135 years, belonged to Garrigill. His death was noticed in a communication of Bishop Litletton's to the Society of Antiquaries, which I have not seen.

THE GAME LAWS.

The game laws in England during Saxon times are said to have been very mild, but we have no information respecting their enforcement in Alston Moor. The forest laws of the Normans were very harsh and severe. To what extent they were enforced in the forests of South Tynedale is not known, and it is doubtful whether any documents are now in existence to afford information. There can, however, be little doubt of forest keepers being appointed to preserve and feed the deer in severe winters. Offenders against the forest laws were probably punished at the Baronial Court Leet. The deer were hunted and killed with bows and arrows. Falconry is a very ancient sport practised in India and known to the Greeks and Romans. It is said to have been in existence in this country as early as the eighth century. In the twelfth century it was the favourite sport of nobles and knights; it is, therefore, probable that it would be practised by the Vetripontes and their successors to capture the partridges and grouse on

their manors and moors. This sport commenced to decline about the beginning of the seventeenth century, and this decline was owing to the improvements in fire-arms presenting a far easier method of obtaining game.* Since the Conquest the laws relating to the preservation of game have always been exceptionally severe. In 1485 hunting in the night-time in disguise was made felony. In 1496 an Act was passed which inflicted a penalty of £10 on persons who take a pheasant or partridge in another's freehold—for the period a very great penalty—and the taking of the eggs of hawks or swans was punished with a fine or one year's imprisonment. An Act was passed in 1603 which inflicts a penalty of twenty shillings for destroying any game or pigeons; and in 1606 hunting deer or conies was punished with three months' imprisonment and treble damages. In 1610 a penalty of ten pounds and treble damages was inflicted for hunting deer in parks. Much of the time of James I. was spent in hunting. An Act was passed in this reign which made the qualification for killing game £40 per annum from landed property. In 1683 the qualification to kill game was fixed at

* Brand's Dictionary of Literature.

£100 per annum for life, or a lease of 99 years of £150 per annum. After this Act was passed very few persons in Alston Moor would be qualified to kill game, as the farms were generally small and the value of the land low. In 1706 a penalty of £20 was inflicted for hunting deer in parks, and £30 for every deer killed. About the same period an Act was passed against unqualified persons having game in their possession; under which penalties were imposed of not under five shillings, or more than twenty shillings for every hare, partridge, &c., found in their custody; and for keeping dogs, nets, snares, &c., a like penalty.

The most important Act relating to game was passed in 1832, which defines game to include hares, pheasants, partridges, grouse, heath or moor game, black game and bustards. This Act dispenses with all ordinary qualifications and allows every certificated person to kill game, liable to ordinary proceedings in case of trespass. Persons who obtain certificates are allowed to sell game, and licenses are granted to persons to deal in game. This Act has been modified recently. Farmers can now capture hares and rabbits on their farms without any license.

It is evident from the above that the small landed proprietors in Alston Moor could not shoot or capture grouse, &c., upon their property until 1832. I am inclined to suppose that after the attainder of the Earl of Derwentwater the game laws were not, for many years, enforced in Alston Moor, and that the strict preservation of game only commenced some time after the Greenwich Hospital obtained possession of the estate. In the reports of their agents in 1734-5, no allusion to the grouse or deer is ever made, nor are there any estimates of salaries to gamekeepers. Certain it is that some sixty or seventy years ago the inhabitants of Garrigill considered the claims of the Lords of the Manor to the grouse as an unjust interference with their rights. Probably, grouse were not much preserved in Scotland so late as the latter part of the last century. Sir Walter Scott's writings are allowed by all to contain very accurate representations of the customs, habits, and pursuits of the Scottish people in former times. Except in "The Antiquary," I do not remember any allusion in them to the preservation of the winged game on the moors. In "Guy Mannering," the following conversation, between Brown and Dandy Dinmont, occurs:

"I suppose game is very plenty with you?"

"Plenty, man!—I believe there's mair hares than sheep on my farm; and for the moor-fowl, or the grey-fowl, they lie as thick as doos in a dooket. Did you ever shoot a black-cock, man?"

"Really, I had never even the pleasure to see one, except in the museum at Keswick."

"There now—I would guess that by your south-land tongue. It's very odd of these English folk that come here, how few of them has seen a black-cock!—I'll tell you what—ye seem to be an honest lad, and if you'll call on me—on Dandy Dinmont—at Charlies-hope—ye shall see a black-cock, and shoot a black-cock, and eat a black-cock too, man."

In the same way, it is probable the Lords of the Manor did not prevent the inhabitants of Alston Moor capturing or shooting grouse during the greater portion of the last century. Nor does it appear that the fish in the rivers were preserved; for in the graphic picture of spearing salmon in the same romance there is nothing about any rights of ownership in the salmon. In "Red Gauntlet," Joshua Geddes is represented as a partner in a fishery on the Solway. The hares and winged game on Geddes' land are,

however, represented as being preserved from motives of humanity, and not for their monetary value. In the former part of this century, Garrigill Gate was a centre of poachers, and the inhabitants hardly considered poaching as a crime. In consequence of their sympathy, the authorities were unable to enforce the game laws and the laws of trespass. In 1819, Messrs. Beaumont and Brandling sent a company of Hussars into the district to capture the poachers. Some of them had narrow escapes; none of them, however, were taken into custody. A settlement was ultimately effected, and one of the conditions was that the poachers must deliver up their guns to the authorities. Worthless, worn-out guns were purchased for this purpose and poaching continued to be practised more cautiously, but to as great extent as before. Since I can recollect, very large quantities of grouse were brought, during the season, to the Fox Inn, in Garrigill, and sold to the dealers on the Saturday evenings, notwithstanding game, before 1832, was not lawfully saleable. The law was certainly evaded or not enforced, for the dealers had no difficulty in disposing of the game in large towns. In two instances the encounters with the poachers

terminated fatally. The licensing laws of 1832, in a great measure, checked poaching, and for a number of years after their vigorous enforcement the grouse increased rapidly in numbers. I remember seeing immense flocks of them, late in autumn or in the early part of winter, in the upper parts of the Tyne and Tees. The grouse disease made its appearance and vast numbers of them died, and probably they have never been so numerous since. In the division of the Alston Moor commons the Lords of the Manor made no reservation of their rights to the game which now belongs to the proprietors of the soil.

ON THE RELIGIOUS INSTITUTIONS.

At what period Christianity was first introduced into Alston Moor is a question that cannot now be satisfactorily answered. If the Saxons had embraced Christianity, was their worship interfered with by the pagan Danes in the ninth century, or did the paganism of the Saxon linger in secluded dales of the North of England up to the time of the Conquest? These are questions which admit of no answer. If any records did once exist they have all perished—"consigned to the treasures of oblivion, where much is buried in silence." The Danes hated Christianity and wreaked their vengeance especially on the religious houses, where they found the most to plunder. The destruction in the kingdom of Northumbria was complete. The monastic establishments with their records were destroyed. The magnificent buildings for religious purposes, erected by Wilfrid, at Hexham, were destroyed, and lay in ruins for nearly two centuries. That the paganism of the Saxons and Danes existed in the eleventh century, is

certain from the law made by Canute, the first Danish King [1017-1036] strictly prohibiting all his subjects from paying adoration to the sun, moon, sacred groves and woods, hallowed hills and fountains.* The two northern counties were joined to the Crown of England by William the Conqueror. In 1086, the following proclamation was issued by him only the year before his death. "William, King of England to W. Son of Theodoric and all his faithful of Carlisle, and all who live beyond the Lowther, greeting. I command you that you receive Christianity of the Bishop of Durham, and of his Archdeacon, and to the aforesaid Bishop be ye obedient to the laws of Christianity, as you justly aught to obey your Bishop: and see ye as you love me, that you no further do thereof make any molestation to the ministers of the Bishop unjustly. Witness, Robert, son of Girald, &c."† In 1032, or forty-six years after the above proclamation, Henry I. erected the bishopric of Carlisle, and placed there the first bishop, Ethelwulph, Prior of St. Oswald, to whom he used to confess his sins.‡ It was the

* Horne's Year Book.

† Monasticon Anglicanum II., 845. Translated in Ritson's Annals of Cumberland.

‡ Ritson's Annals of Cumberland, page 215.

general practice, after Christianity was enforced by the authorities, for the possessor of a manor to erect a church and charge the lands for ever for the maintenance of the clergyman or priest. In 1164 a council of states was held to consider religious affairs, and the sixteen laws called the Constitutions of Clarendon were passed. The settlement of religious questions was one of the objects of the politic Henry. One of the laws enacted was that all vacant dignities in the church should be in the hands of the sovereign. It does not appear improbable that the King of Scotland had failed to erect churches in his franchise of Tynedale, and that churches were ordered to be built by Henry. If this is correct, Galford was probably the first rector appointed to the living of Alston. For these events, as will be perceived from the dates, took place before William the Lion granted the Manor, in 1209, to William de Vetriponte. Had the church been built and priests appointed by the kings of Scotland previous to the Conquest, the patronage of the living would, I suppose, have remained in their possession, and been included in the grant of the Manor. The patronage was claimed by Ivo de Vetriponte (who

was living in 1280) for he granted the advowson to the monastery of Hexham; but the claim of the monastery was disallowed and the patronage remained in the possession of the Crown until 1306-7, or during the winter Edward I. spent at Lanercost Priory, when he restored the advowson of his church to the Monastery of Hexham. *

The Priory and Convent of Hexham petitioned the King to have the revenues appropriated to their own use, but it was not till 1376 that any greater portion than 6s. 8d. was legally settled upon them. In 1549, after the dissolution of the monastery, the rectory and advowson of Alston was granted to Sir John Peryent, Knight, and Thomas Reeve, gentleman. It appears, however, that there was either a subsequent grant to Arthur Lee and Thomas Archer, who admitted Sir Thomas Hilton, Knight, to a third portion; or that Sir John Peryent and Mr. Reeve as grantees of the Crown conveyed it to Messrs. Lee and Archer. It also appears, from two reports written in 1734-5, that the Lord of the Manor paid one-half £8 8s. 8d., and Messrs. Stephenson and

* Alston Manor always formed a part of the Diocese of Durham until 1882, when it was included in the Bishopric of Newcastle.

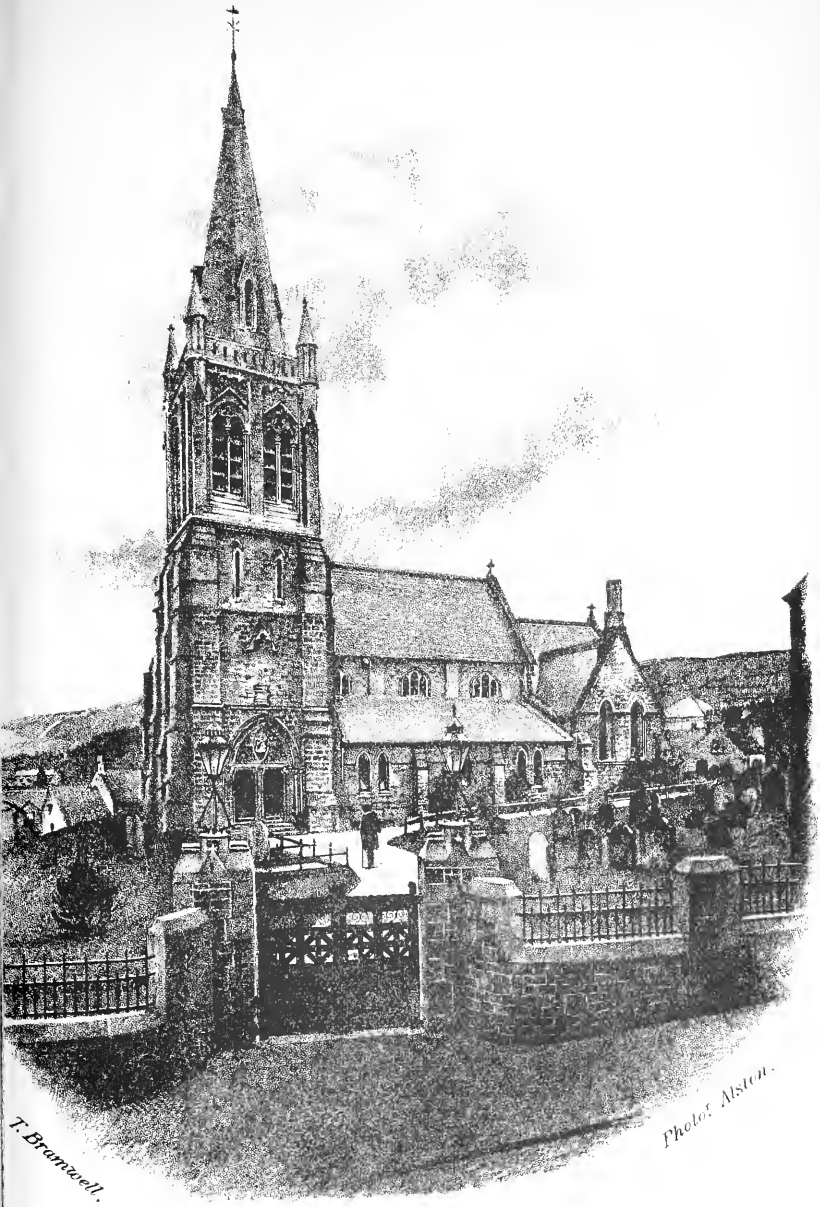
Whitfield the other half to the Rev. John Topping, the Vicar, who also held a living in Allendale. At that period the Rev. Thomas Lancaster was his curate, and he obtained the living in 1756. "The trustees of Greenwich Hospital are now in possession of the whole of this impropriation. In 1291 the rectory of Alston was valued at £8 a year; in 1535 the vicarage is returned as worth £7 13s. In 1663 the parish church and the chapel of Garrigill were both served by one clergyman, the stipend being only £12 6s. 8d. with some small glebe. In 1777 the benefice was worth about £80; in 1835 its net value was £130, and it is worth at present about £140. By an Act passed in 33 of George III., (1792-3) the Governors of Greenwich Hospital received 3551 acres [of common land] in lieu of great tithes, and by a voluntary rate of fourpence in the pound the parishioners purchased a close of land which the Vicar now possesses in lieu of tithes, together with a small yearly modus."* The parish registers commence in 1709.

There is no information extant respecting the dates of erection of the churches which had been in

* Whellan's History.

existence previous to 1769; nor respecting the architectural style in which they were built. At the above date the church was pulled down and rebuilt, in a plain style, at a cost of about £1,500. It was not, however, uncommon to give free labour and cartage instead of donations of money. In 1869-70, or after the lapse of a century, this church was totally demolished, and, excepting the tower and spire, rebuilt at a cost of £4,500. The building of the tower and spire was commenced in June, 1886, and completed at a cost of over £1,000. Miss Hodgson, of Salkald Hall, generously contributed £700 towards their erection. The tower, with the spire, is 105 feet high, from the ground to the vane. The church is a very handsome building. It was designed by Mr. G. D. Oliver, of Carlisle.

"The bell and the clock [of Dilston Hall] were given to the church of St. Augustine, at Alston. The former bore the date 1714, and therefore had not been long in the possession of the Earl. The bell having been cracked in 1845, was re-cast with some additional metal, so that its tone is no longer that which sounded through the gallant Derwentwater's festive hall. The Board minute of the



ALSTON CHURCH.

Commissioners for the donation of the bell and clock to Alston Church is dated 18th August, 1767." *

The churchyard was closed for burials, and a new cemetery opened in June, 1860.

The vicarage is a plain building. It was erected by the Commissioners of Greenwich Hospital, in consideration of the Rev. B. Jackson, the then Vicar having ceded to them his right to every third presentation to the benefice.

The following is a list of the Clergymen who have held the living from the reign of Henry II. to the present time :—

Rector :—Galfred. In the reign of Henry II.

Vicars:—John Cokeden ; William Lambert, 1422 ; Sir Robt. Hilton, 1423 ; Robert Jackson, about 1451 ; Robt. Stehyson, —— ; John Ellison, about 1495 ; Thomas Gray, about 1499 ; Sir — Stephaneson, 1517 ; John Hymers, 1536 ; Henry Yaites or Gates, 1558 ; Anthony Watson, 1577 ; William Teasdale, B.A., 1578 ; John Nelson, 1618 ; Ralph Young, 1624 ; Francis Hill, B.A., 1625 ; John Lee, 1665 ; John Fell, —— ; William Stebert, 1683 ; Nicholas Walton, 1696 ; John Topping, 1728 ;

* Gibson's Sketches of Northumberland Castles.

Thomas Lancaster, 1756; Benjamin Jackson, 1790; Thomas Foster, M.A., 1835; Meyrick Beebee, 1839; Hugh Salvin, 1841; William Nash Snow, 1853; William Cecil Jsery Baylee, 1862; John Milner, 1873; Edward Lawson Bowman, 1875; William Alan Rutherford, M.A., D.D., 1889.

Garrigill Chapel is of great antiquity. It was probably founded about the same period as Alston Church. It is dedicated to St. John. The old church was a very poor building, and in a dilapidated condition, when it was pulled down and rebuilt in a very plain style, in or about 1790. The Vicar of Alston is the patron. For many years, perhaps for centuries, there was only divine service on every third Sunday morning. The church bell was cast about or a little after 1765. The parsonage house was erected by subscription in 1851, at a cost of between four and five hundred pounds. The chief contributors being the Rev. H. Salvin, Captain Salvin, the Commissioners of Greenwich Hospital, and the London Lead Company. The following is a list of the Curates who have resided in the chapelry:— John Hind, ——; James Steel, ——; Blythe Hurst, ——; George Monkhouse, 1851; James Welsh, ——;

William Muskett, who left in 1876. After this date no resident Curate was appointed, until 1888, when the chapelry was endowed, and the Rev. Percy Thomas Lee appointed. During the interim, the services were performed by a clergyman, sent as in former times, by the Vicar of Alston.

The church at Nenthead was built in 1845. The site, burial ground and parsonage house were presented by the London Lead Company. The Rev. Blythe Hurst was the first incumbent. The following is a list of the clergymen who have been appointed to the living :—Blythe Hurst, 1845 ; Thomas Holme, 1850 ; Henry Robinson, 1866 ; James Sharp, 1875 ; William Muskett, 1876 ; Charles Berry, 1878, who now holds the living.

It is probable that there are now no documents in existence to throw any light on the effect produced by the Reformation on the inhabitants of the secluded dales of Upper Tynedale. We may reasonably conclude that they would not be made Protestants all at once by Acts of Parliament, or by Royal Proclamations. The doctrines and rites of the older church, which they had been taught to reverence and practice from infancy, could not be readily abandoned.

Time, however, gradually removed those who had been communicants of the Roman Catholic Church, or had been educated in the religious houses, and, at the period of the restoration, all were members of the Established Church. They probably were little acquainted with the aims of the Puritans, for the purification of the church, and the abolition of what they considered to be objectionable ceremonies; and probably cared little for the right of free enquiry into the subjects of morals and religion. They probably had little or no acquaintance with the Courts of Star Chamber or High Commission, nor any other except their own Manorial Courts, where they had Home Rule in its simplest form. Their skies might be gloomy, and their winters long and dreary, yet, during the eventful times which followed the Reformation, to them Gray's lines are especially applicable :—

> "Far from the madding crowd's ignoble strife,
> Their sober wishes never learn'd to stray;
> Along the cool sequester'd vale of life:
> They kept the noiseless tenor of their way."

Such circumstances do not however promote mental activity. The intellectual powers stagnate.

The first event that created a little diversity in the two parishes, and probably elsewhere in the dales, on religious subjects was the Act of Uniformity which passed into law on the 17th May and was enforced on the 24th of August, or St. Bartholomew's Day, 1662, by which 2000 Presbyterian and Independent Ministers lost their preferments and were ejected from their livings just before the Michaelmas tithes were paid. The Rev. John Fell, who at that time was Vicar of Alston, was an Episcopalian, or one of the conforming ministers; but the Rev. Nathaniel Burnard was a Non-conformist, and, in consequence, was ejected from the Brampton Vicarage. According to Calamy, "Burnard retired to the desert places in *Austin-Moor*, and there took a farm, which he managed carefully for the subsistence of his family; on the *Lord's Day* preaching in his own house, afterwards at *Burneston** in public, where he was connived at. At length, Providence favouring Sir W. Blacket in his lead mines, he fixed him there to preach to his miners, with an allowance of £30 per annum. He had great success among

* Possibly Burnfoot in East Allendale? It is not probable that he would be allowed to preach at Burnstones, Knarsdale.

those ignorant creatures and did much good. But when the mines failed, being again at a loss, he came up to London, and from thence went for some time to a congregation at Harwich. But age coming upon him, he at length came to London again, and subsisted upon the charity of well disposed Christians, till death gave him *quietus*."†

In the above extract it is not expressly stated that Burnard took a farm in Garrigill, though that is *highly* probable. His preaching would be less likely to be interfered with there than at Alston, and the result was to introduce Dissenters into Garrigill but not into the town of Alston. It is also stated that he preached in *his own house*. If this statement of Calamy's is correct, it could not possibly have been in the Chapel cottage represented in Mr. Dickinson's photograph of which an autotype is given in Mr. Whitehead's paper: for it has never been a farm house, nor have there ever been any farm buildings connected with it. The Conventicle Act was passed on the 17th of May, 1664, and its enforcement would

† Quoted from the Non-conformist's Memorial, Palmer's Edition I., 296, by the Rev. H. Whitehead, in a paper on Brampton Presbyterians, inserted in the Transactions of the Cumberland and Westmorland Antiquarian and Society, 1886.

prevent Mr. Burnard from preaching in his own house or in a chapel to more than five persons. Charles' proclamation on the 15th and 16th March, 1672, of a declaration of liberty of conscience to dissenters was a step in order to pave the way for the introduction of Roman Catholic worship into the country. Notwithstanding the opposition of Parliament it would produce a considerable effect: and probably occasioned a less rigorous enforcement of the penal laws. Perhaps his preaching at Burnestone, which was connived at, was ventured upon after Charles' proclamation, some nine years after he left Brampton.

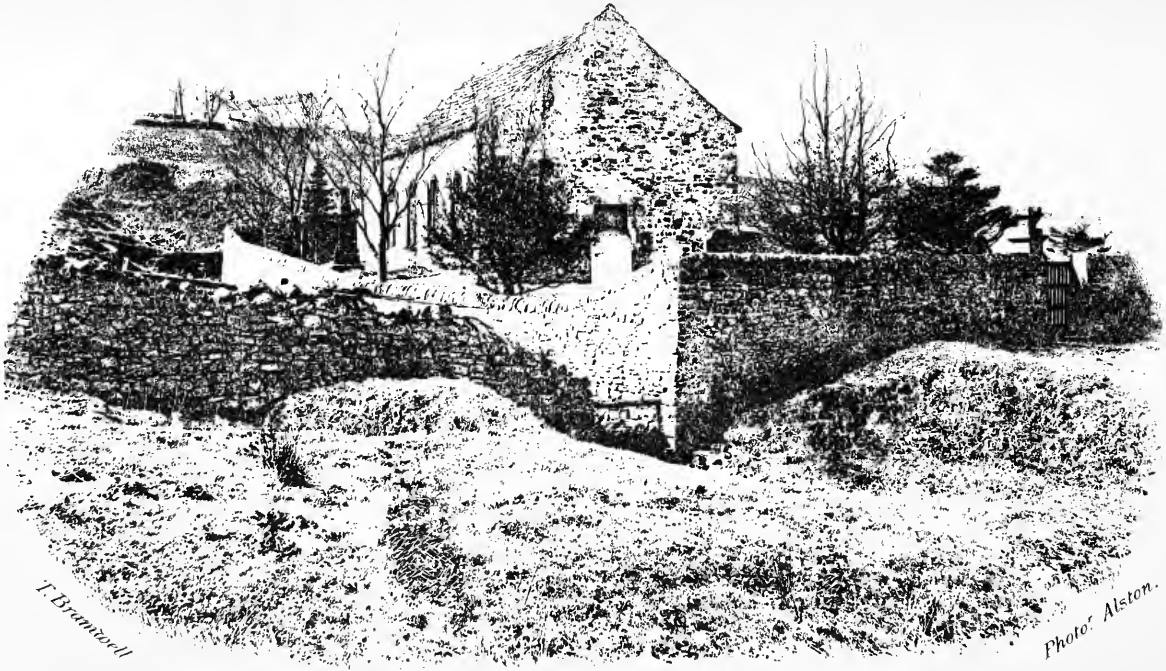
It appears from Calamy's statement that Burnard left Garrigill either for East or West Allendale and remained there until the mines became poor. From another source we have a tradition that there was much poverty among the miners of Allendale during the latter part of the 17th century. It is therefore probable that Burnard left Allendale for London about the year 1690.

Mr. Burnard was succeeded at Garrigill by the Rev. Thomas Dawes, who, according to the Congregational Magazine "preached, in times of persecution,

at different houses in the neighbourhood, and towards the close of his life in a newly-erected meeting-house at Garrigill." The meeting-house could only have been erected after the Toleration Act was passed on the 19th April, 1689. By this Act all Dissenting places of worship had to be licensed. It is the 'cottage chapel' which Mr. Whitehead has mistaken for Burnard's farm-house residence. It has evidently been raised a little when it was converted into a cottage about the latter part of the last century. The engraving opposite is an attempt to restore it (from Mr. Dickinson's photograph) to its original appearance. It was probably covered with "ling heather thatch," as there are some reasons to suppose many of the cottage houses and buildings were in the seventeenth century. Mr. Dawes was succeeded by four ministers, whose names I have not been able to obtain.

In 1749 the Red Wing Estate was purchased for the Dissenters. The deed of trust is dated the 1st of May of that year, in which "it is declared that the Redwing Estate was purchased by and conveyed to Joseph Emerson upon trust for the congregation of Protestant Dissenters dwelling within the limits

THE DISSENTERS' CHAPEL AT LOANING HEAD
PROBABLE DATE 1690.



INDEPENDENT CHAPEL.

and boundaries of Alston Moor, who from time to time and statedly assemble for the performance of Divine Worship at their meeting-house or place of worship at Loaning Head or Upper Dodberry in Alston Moor aforesaid." This deed further states that the Rev. James Richey was then the minister. The present chapel was built on this estate in 1754. After the Loaning Head Chapel was abandoned it was probably used as a mine shop for a few years by Ralph Watson and Company.

Mr. John Dickinson, one of the Garrigill Independents was appointed moor master in 1790. He was one of the principal persons who established the Independents in Alston town. Their first meetings were held in a large room at the Alston factory. According to Whellan, the first chapel was built in 1804, which date receives support from manuscript notes written by the late John Millican, Sen., Nenthead. In 1804, Mr. Millican was Mr. William Todd's book-keeper in the factory. The present chapel "was built about 1811, and the deed of conveyance of the ground and chapel is dated 20th May of that year."* It was greatly enlarged and improved in 1845.

* Communicated by J. Dickinson, Esq., Loveladyshield.

The Rev. James Richey "appears to have been succeeded by the Rev. Timothy Nelson, who continued to be the minister at Redwing until the latter part of the year 1800, for in a letter dated 2nd October of that year to Mr. Jos. Dickinson, of Loveladyshield, he states that he is about to resign the pastoral charge of the congregation." The following is a list of the Congregational Ministers at Alston and Garrigill :—

William Morris, 1800 to 1815; Jonathan Harpur, 1815 to 1858; R. E. Long, 1858 to 1860; J. Harker, 1861 to 1871; G. Wood, 1872 to 1873; F. Lamb, 1874 to 1877; W. Parris, 1877, the present minister.

Few particulars are now extant respecting the establishing of Methodism in the district. It appears from Wesley's Journal that he visited Alston Moor for the first time in 1748. "Thursday, 28th July, 1748. We rode over the moor [from Hindley Hill] to Nenthead, a village south-west from Allendale, when I preached at eight. We then rode on to Alston, a small market town in Cumberland. At noon, I preached at the Cross, to a quiet, staring people, who seemed to be little concerned one way or the other." It is probable that at this date there was no Society

formed, for Mr. Wesley does not allude to any in this entry in the Journal. Yet, only twelve years after, the first chapel was built in Alston. After a new one was erected in 1797, the old chapel was sold to Joseph Hall, the clockmaker, who converted it into a dwelling-house and watchmakers' shop. A society was formed in Allendale before 1752. There were traditions extant in Garrigill relating to the part Christopher Hopper and Jacob Rowell from Keenley had in the establishment of Methodism in the district. I suppose they were local preachers. I have not been able to ascertain any facts connected with the establishment of this Society in Garrigill. There was, however, a very considerable increase of members during the years 1785 to 90. Their first meeting-house was the old Independent chapel at Loaning Head. It had, as we have already stated, been used for a mine shop, by Ralph Watson & Co., who held a lease of the Hilltop, or Dodberry mines until 1760, or, perhaps, a few years later. It was probably occupied by the Methodists, about the year 1765. I have not been able to obtain the date of the erection of the chapel at Low Houses. I suppose about the year 1790, or,

perhaps, a few years earlier. This site was given by a family of the name of Johnstone, who, at that time owned the Shield Hill estate, which, in ancient times, formed a portion of the Hundy Bridge Manor or estate. This chapel has been rebuilt or remodelled several times during the present century. It does not appear that Mr. Wesley ever visited Garrigill.

At Nenthead the Methodist Society's meetings were at first, I believe, held in the school-room on Foulard, about one-half a mile from the village; generally known as the Calummy House,* now in ruins. I have not ascertained the date when the first school-house was built in the village; it was fitted with a pulpit, and used as a chapel. In 1816, the school-room was rebuilt, on the same site—(the site now occupied by the Miners' Arms Inn,) for a chapel and school-room. The chapel had a gallery on each side, and the school-room was attached to the west end of the chapel. In 1826, this chapel and school-room were purchased by the London Lead Co., for £220, and a piece of land for a site for a new chapel, which was built in 1827. This chapel was remodelled or rebuilt in 1873. Mr. Wesley

* A corruption of calamine, an ore of zinc. It was used as a store-house of ores of zinc, by Thomas Shaw & Co. in 1817.

preached at Nenthead on the 5th May, 1770. He was then 67 years of age. He died on the 2nd March, 1791.*

The following are all the dates when the Methodist chapels were built or re-modelled, which I have been able to obtain :—

Alston chapel built	1760
do. new one	1797
do. improved	1825
do. new one	1870
Nenthead meetings in school-houses until	1816
New chapel . . .	1816
do.	1827
do. or remodelled	1873
Garrigill chapel at Loaning Head first occupied in 1763 or (?)	1766
New chapel, Low Houses .	1875-90
do. improved several times.	
do. new one re-built and en-larged . . .	1859
Tynehead chapel and School-room, pro-bably	1823
Nentbury . . .	1825
Nest	1844
Brownside . . .	1849

*The Hexham Circuit embraced a very wide district. The following list of places is taken from the Sabbath Day Plan for July to February, 1805-6 :— Hexham, Haydon Bridge, Great Whittington, Corbridge, Broomshield Haugh, Shildon, Cronkly, Dean Hold, Coalgate, Rookhope, Thornly, Crook, Wolsingham, Frosterley, Stanhope, Eastgate, West-gate, Highhouse, Gallygill, Nenthead, Alston, Garrigill, Tynehead, Coanwood, Knarsdale, Lowhouse, Keenly, Allendale Town, Wolf Cleugh, Allenheads, Greenly Cleugh, and Coal Cleugh.

The Methodist ministers in those days were truly called travelling preachers.

For a list of preachers stationed in the Alston circuit, see appendix No. 1.

The Primitive Methodists were established in Alston Moor about the year 1820. Their chapel at Alston was built in 1825, and rebuilt in 1845. The chapel at Nenthead was built in 1823, and rebuilt in 1852. The chapel at Garrigill was built in 1825, and a neat erection has been made with the date 1885, but opened in 1886.

The Friends' Meeting House at Alston was erected in 1732. There were Friends residing at Alston before this date, and it is probable that they had a chapel or some place of meeting before the present meeting-house was erected, for there was one erected at Wellgill, near Nenthead, in 1724. The meeting house at Nenthead was not used as a place of worship in 1793. How long before I have not been able to ascertain.

THE SCHOOLS.

The period when the schools at Garrigill and Alston were established is not known. It was not until 1406 that villeins, farmers, and mechanics were permitted by law to put their children to school; and long after that they dared not educate a son for the Church without a license from their lord. Before the Reformation young men were educated in monasteries, and women in nunneries, where the latter were instructed in writing, drawing, confectionery, needle-work, and, what were then regarded as female accomplishments, in physic and surgery. The acquisitions of men were confined to writing, and a tincture, probably of barbarous Latin; but ignorance was so prevalent that gentlemen, unable to commit notes to writing, were recommended the practice of notching a stick to assist their memories. The tally stick notched to register the quantities of lead ore weighed before its removal from the washing floors, is in use at the present time, and was probably adopted at a very early period, when there were very

few people in the country who could either read or write. "The practice of keeping a pledge, conveying orders, or guaranteeing accounts by laying two sticks of the same size together, and making similar notches in each, is exceedingly ancient. It was the *symbolum* of the Athenians, probably the SCYTALÈ of the Spartans, and it was the *tally* of this country; a mode of reckoning only lately antiquated, if indeed it be quite extinct. The same convenience is the basis of the legal *indenture*."

"Up to within the last forty years (1867) the public income was checked by tallies made of hazel or ash rods, *indented* and *split into two parts*, one part being retained by the payer, the other by the teller of the exchequer. Daily sales of milk to private families were registered in the same way, as also the scores kept by brewers against publicans. It is said that the more modern system of account-books is not found equal in point of safety to these ancient modes of reckoning."*

Grammar Schools were founded by law in 1447. The first schools built were chiefly in or near London. Appleby Grammar School was in existence

* Brand's Dictionary of Science, Literature, and Art.

in 1453, (how long before this date is not known,) yet it appears that in the country generally there were few schools established until after the dissolution of the monasteries and convents, during the years 1528-1538. It was not till 1582 that the first Grammar School was founded in Leeds. The Penrith Grammar School was chartered in Elizabeth's reign, July 18th, 1564. It is, therefore, probable that the Grammar School at Alston, and the school at Garrigill were founded about this period or shortly afterwards. I think the old school-house at Garrigill, from the style of the building, has evidently been erected at a later date. There might have been a school-house in existence before this one was built. There certainly was a school in 1685, when Mr. Wilkinson bequeathed £3 per annum to this school for teaching six poor children to read the Bible. The Alston Grammar School was rebuilt in 1828, and, I believe, has since been remodelled.

One of the most important results connected with the dissolution of the monasteries and convents was the establishment of these public schools all over the country. The art of printing was introduced by Caxton about the same period. Since then how vast

has been the advance in learning of all kinds! Much, however, remains to be done before the conventionalities and prejudices of society are counteracted, and the youthful mind trained to think correctly, and, discarding authority, encouraged to search for and love truth for its own sake.

The High School at Alston was built in 1811. At one time it was called the Charity School. The Charity Schools originated in London in 1698. They excited much enthusiasm and were great favourites with the public. They gave the children instruction in reading, writing, and arithmetic. They also clothed and apprenticed the boys and prepared the girls for domestic service.

The National School at Alston, for girls, was erected by subscription in 1844. The Lords of the Manor contribute £10 per annum towards its support. In connection with this school an Infant's School was built by the Rev. Hugh Salvin, in 1851. This school is supported by subscriptions.

The Girl's British School in Garrigill was erected in 1850. It was amalgamated with the old school under a scheme of the Charity Commissioners. A new boys' school was attached to the girls' school in 1872.

We have already noticed the erection of the Tynehead School in 1823-4, which is used for a Methodist Chapel on Sundays. The old school at Tynehead was situated on the north side of Dortgill and on the low side of the road. I do not know when it was first established; it was in existence in 1788.

We have also noticed the old school-rooms at Nenthead in connection with their use as Methodist Chapels. In 1821 a large school-room was built by the London Lead Company in the centre of the village: and a large and very handsome school was erected in 1864, on a new site, above the village, by the same Company.

Schools have also been erected at Brownside and Nenthall.

Sunday Schools were first established in Gloucester by Robt. Raikes and the Rev. Mr. Stock in 1781. Four years after the Sunday School Society was formed, the first Sunday School in Alston Moor was begun to benefit the children employed in Mr. William Todd's manufactory. It was managed by Mr. John Millican, Mr. Todd's clerk, Mr. Thomas Shields, and Mr. Joseph Gibson, a sail cloth weaver,

and Methodist Local Preacher. This school was removed to the Independents' Chapel, which was built in 1804, Mr. John Dickinson, agent for the Greenwich Hospital, being the chief manager. The period when Sunday Schools were established at Nenthead and Garrigill is not now ascertainable, but probably shortly after the above dates.

Subscription Libraries were in existence, both at Alston and Garrigill, in the second decade of the present century, and probably at an earlier date. The London Lead Company provided a library and reading room for their workmen at Nenthead. The Subscription Library connected with the High School at Alston was founded in July, 1821; the Mechanics' Institution was established in 1847. It was placed under the management of Mr. John Atkinson, and was kept for eleven years in a room connected with his house, which was above the Lowbyer ore-receiving house. The Town Hall was erected in 1857-8 at a cost of about £2,111. It comprises the court-house, a reading room, and a mechanics' institution room, and a fine room for public business, meetings, &c., capable of accommodating 411 persons. In 1848 a reading room was built at Garrigill.

The above is a brief history of the efforts of religious bodies and employers of labour to benefit the population. In 1735 there were probably not more than two or three schools, two churches, two Dissenting chapels, and two Friends' meeting houses in the parish. Since that period one new church and a considerable number of Dissenting chapels have been built, and the old churches much improved. Several additional schools have been established in the district. The good effects of these efforts to improve the morals and enlighten the understandings of the people must have been very great; and as there has been an almost constant stream of emigration out of the country during the present century, and even at an earlier period, the benefits of education have been carried into other localities and into distant continents. In one of Mr. Locker's reports to the Commissioners of Greenwich Hospital, written in 1821, he describes "the inhabitants as an industrious and loyal people, moral and intelligent, and of simple habits. The nature of their occupation as miners leads them to inquiries which greatly quicken their understanding, and urges them to seek from books such parts of practical philosophy as are

applicable to their profession. They are excited to industry by the prospect of independence, the successful adventures of other miners acting as a powerful stimulus to the pursuit."* Since the above was written much has been done to promote the moral and mental culture of the working classes, and with the best of results; for there are very few people who are not able to read and write and keep their own accounts. Mr. Locker then stated that the mines yielded an annual produce of £100,000, and the lands produced a rental of £12,000, per annum.

In the report of the Commissioners on Education, which was laid before Parliament in 1861, the Alston Moor population are described as "a steady, provident, orderly, and industrious people; a high-minded people, disdaining pauperism as the deepest degradation."

The practical teaching in schools, and the information derived from books and periodicals issued from the press during the last fifty or sixty years have banished much of the superstition that formerly prevailed, and which centuries of religious teaching had failed to eradicate. Superstitions date from

* Sopwith's Mining Districts, page 25.

very remote periods of time, and are common to the Aryan and all other races of men. They are very difficult to root out of uncultivated minds. Fire worship was common in our islands. In the infancy of the Celtic race, terror was the moving power. The bubbling of a spring, the agitation of the forest leaves, and the flight of a bird were charged with sentences of life and death, and even yet we find that many of the superstitions, romances, and wild legends are still in existence in the southern parts of the island. Within my recollection the ghosts of suicides were often said to appear; but, as Dr. Johnstone said of the ghost in Hamlet, to very little purpose. It was also believed by many that the ghosts of murdered men haunted the place where they were murdered. Stories of wraiths—or apparitions of a person about to die—having been seen were not uncommon. The prejudice against burying the dead on the north side of the church seems to have existed in Garrigill, for the south side is full of graves, none having been made on the north side. The howling of a dog during the night was believed to prognosticate the death of some individual in the house.

The belief in witches had not died out, since I can remember. Old Elizie of Coal Fell, in Hartley Burn, was called a witch, and was consulted by people, who believed themselves to be suffering from some evil influence, but who really ought to have known better.

The fairy mythology is said to still exist in Cornwall. In Alston Moor the belief in them as real beings had probably ceased to exist before the beginning of the present century. That it was formerly prevalent is probable from the fairy holes and fairy beads,—the former supposed to be their places of abode, and the latter the handiwork of these little people.

Unlucky days, charms of holed stones, with other superstitions of a similar character that existed some sixty years ago, have probably now lost all their influence, even over the most ignorant portion of the population. The teachings of science, and the positive methods of enquiry, have prevented these romances and superstitions from being handed down from father to son. What people cease to believe they cease to teach.

THE CHARITIES.

BEFORE 1739, several sums of money, amounting to £217 5s., had been bequeathed by donors whose names and dates of their bequests are not given in the report of the Charity Commissioners in 1834. The sums bequeathed are as follows :—

To the poor of Alston . . .	£83	6	8
To the school of Alston . .	81	5	0
To the poor of Garrigill . .	27	13	4
To the school of Garrigill .	25	0	0

With this sum the Nether Fairhill freehold estate, and one-fourth part of Fairhill pasture of leasehold tenure, was purchased. The consideration money was £274, £68 of which was obtained on a mortgage, granted to Ann Whitfield, afterwards Mrs. Graham, who by will, dated 4th April, 1796, directed her executor, George Mowbray, to invest the £68 in such a manner that the yearly interest might be applied to the augmentation of the salary of the schoolmaster at Alston. The Fairhill estate now lets for £100 per annum, of which £37 is paid to the master

of the Grammar School at Alston, £10 to the master of the school at Garrigill, and the remainder is bestowed to the poor of Alston and Garrigill, three-fourths to Alston, and one-fourth to Garrigill.

John Shields, of London, by indenture dated 5th June, 1617, gave forty shillings a year to the poor of the Parish of Alston. This sum is paid annually by the Cook's Company, London, and is distributed yearly on Christmas day; two-thirds are given to Alston and one-third to the Garrigill poor.

Robt. Wilkinson, by will dated 24th February, 1685, gave £100 to the village of Garrigill, where his mother was born, to purchase lands of the clear yearly value of £5, to be disposed of as follows: twenty shillings to the Garrigill Gate School-master, forty shillings for teaching six poor children gratis until they could read the Bible through, the Vicar of Alston ten shillings for preaching a sermon in Garrigill Chapel, ten shillings to be distributed to the poor, and twenty shillings to be retained by the trustees. The six children taught gratis are appointed by the trustees.

John Stephenson, by will dated 29th May, 1759, desired his executor to pay on the 25th of December

every year and for ever, to sixteen poor widows of Alston and the Chapelry of Garrigill five shillings each. This £4 a year is derived from a rent-charge on a house in Westgate street, Newcastle-upon-Tyne. £2 are paid to eight poor widows having settlements in Alston, and £2 to eight poor widows in Garrigill, under the direction of the Vicar of Alston.

Charles Langhorne, by his will dated 26th June, 1802, devised all his property, after the legacies and expenses were paid, to the poor who have settlements in the Parish of Alston, living or residing in or above Nenthall. The residue amounted to £611, for which £777 2s. 1d. of three per cent. of bank annuities were obtained and invested in trust. The interest is paid on the 24th December every year. The will was proved before the 21st July, 1815. The first distribution was made on 24th December, 1818.

Charles Atwood, of Holywood House, Wolsingham, by will dated 12th of February, 1875, and proved 31st March, 1875, directed his trustees to pay £25 per annum to the Incumbent of Alston, to be applied to the benefit of poor people in physical

need, without distinction of religious sect, at the discretion of such incumbent. The sum to be paid yearly by the trustees, or capital to be invested in land, or stock in the public funds, the interest of which would ensure the payment of £25 per annum.

On September 6th, 1865, Miss Hodgson, of Salkald Hall, left £6 per annum to the poor of Alston, to be distributed by the vicar, and £6 per annum to be distributed by the vicar and churchwardens.

Samuel King, of Glasgow, by will dated 6th November, 1872, gave £1836 14s. 8d. consolidated £3 per cent. annuities for charitable, educational, and other purposes. Trustees were appointed 16th April, 1880, but the scheme for the distribution of this charity has not yet been devised. £150 or more of the interest has been applied to discharge the debt contracted in rebuilding the High School of Alston.

THE MARKET CROSS AT ALSTON.

A Market Cross at Alston was erected before—how long before—1748 has not been ascertained. It is not certainly known that the cross erected by Sir William Stephenson, Knight, in 1764, was built on the site of the old one. The following is a copy of the inscription on the present building: "This Market Cross was originally erected on a site belonging to the Greenwich Hospital, by the Right Honourable William Stephenson, Knight, born at Crosslands, in this Parish, and elected Lord Mayor of London, A.D. 1764.* Rebuilt by subscription, A.D. 1883." The site probably formed a portion of the town or village green in ancient times; and as such was a remnant of unappropriated land, when the village community of Alston was formed. The theory that these greens originally belonged to the Lord of the Manor, and that he granted the public rights of

* Is it probable that the oldest cross stood in the Square near the Crown Inn. (?)

enjoyment over them, cannot now be sustained, and the futility of the theory has been admitted by the judges.† It is stated that the site of the cross belonged to the Lord of the Manor. If the old cross stood there, the site may have been granted or appropriated long before the Greenwich Hospital obtained possession of the property. That a cross was in existence in some part of the town before Sir William's cross was built is perfectly evident, from the fact that Mr. Wesley preached at Alston Cross on the 28th July, 1748. It does not appear improbable that the whole of the north side of the street was once open space to the churchyard, over which space the public possessed rights, and that the sites of the houses were illegally granted or sold by the Lord of the Manor: and that at a still earlier period, the site for the church and the burial ground were encroachments on this open space, with, however, the probable consent of the community.

Alderman John Stephenson was brother to Sir William. There is some reason to suppose that their father was Henry Stephenson, who had a lease of the Gilderdale Colliery, in the Earl of Derwent-

† Prof. Pollock's Land Laws, page 39.

water's time. Mr. Henry Stephenson was greatly respected in Alston Moor. There was a Mr. Stephenson, moor master, in the Earl's time, but whether he belonged to the same family or not, I have not been able to ascertain.

THE MINES.

The date of the first working of the Alston Moor Mines is uncertain. We have already pointed out the improbability of any settled people occupying the country in pre-Roman times. Nor is there any evidence to support the conjecture that the Romans occupied the district. Mr. Ferguson says that they certainly occupied the district, and probably worked the mines. That they occupied the district in a military sense is certain; but if Mr. Ferguson means that they resided in the district, formed camps, and controlled a resident population, he ought to give some proofs of his certainty. Except a few miles of Roman road, called the Maiden Way, which is made through a corner of the manor, there are no remains of their encampments, no urns, no vases, no Roman pottery of any kind, no votive altars; nor, in fact, has a single article of Roman use or manufacture ever been discovered in the district except at Hall Hill. The few doubtful coins and pieces of pottery

said to have been found there, without corroborative evidence, prove nothing as to a Roman occupation, for their coins were in circulation and their pottery would be in use long after they left the country, and might be brought there by the Saxons. In the face of these important negations it is surprising that any person trained to sift evidence should advance the opinion that the Romans probably worked the mines. The probabilities point in the other direction.* In many places where the Romans worked the mines, remains connected with this enterprising people have been found. In the stanniferous gravels of Cornwall both Celtic and Roman remains have been found. According to Pliny, lead was found near the surface of the earth, in Britain, in such abundance that a law was made prohibiting anyone from working more than a certain quantity of it. By some antiquarians it is considered probable that the extensive Roman lead mines at Shelve, in Shropshire, are those

* Upon the old plans of the Hole estate, Tynehead, there is a field called '*Chesters*.' Mr. Hodgson supposes that it may have been the site of a Roman encampment. I have passed through the field frequently but could discover no trace of an encampment. The plans of Alston Moor were consulted by the Ordnance Surveyors, and undoubtedly the word '*Chesters*' would attract their attention. They have, however, failed to find any trace of the Romans in the South Tynedale district. The word Chesters is Saxon, and its application was probably not restricted to denote Roman encampments or Castles.

alluded to by Pliny. Three pigs of lead are in the British Museum, supposed to have been obtained by the Romans from the mines in Derbyshire, and one pig of lead was found in 1772, on Hayshaw Moor, in the parish of Ripon, bearing the name of the Emperor Domitian (A.D. 81-96). Another pig of lead was found at Snailbeach, near Shrewsbury, with the name and title of Hadrian (A.D. 117-138). I was once informed that a Roman furnace and a few pigs of lead were formerly discovered near Temple Sowerby. I have not been able to obtain any verification of this statement. If it is correct, the Romans probably obtained the lead from the Westmorland mines. At Dufton Fell mine, rich deposits of lead had been wasted and laid bare by glaciers descending from the higher part of the mountain, and the lead ore so exposed had been protected from atmospheric decomposition by the almost insoluble sulphate of barytes in which it was embedded. Yet this mine had been very little worked until about the end of the seventeenth century, when Mr. Winder, the Lord of the Manor, obtained large quantities of lead from it. If the Romans worked the Dufton Fell mines, they certainly

left rich deposits of lead lying at or very near the surface. They had a camp on Long Marton Common, about three miles from the mine. It is probable that the principal supply of lead at that period was obtained from the rich mines of Hispania. Pliny states that one of these mines was let for £8,000, and one for £3,100. On account of the scarcity of the precious metals, these sums would probably equal about £55,000 of our money in purchasing power. The produce of the mines must have been very considerable, or the price of lead very high to enable the miners to pay these high rents. At that period the lead would be obtained near the surface.

The mines of Alston Moor would be discovered at the surface. Mr. Nall, in a paper published in the "Transactions of the Cumberland and Westmorland Antiquarian and Archæological Society," Vol. 8, Part I., says "there would be no need for blasting, when a supply of lead ore sufficient to meet the demand could be obtained from the beds of the Tyne and its tributary streams." This statement is really absurd, for the loose stones, gravel, and sand which form the beds of these mountain streams are all derived from

the rocks of the country, disintegrated by atmospheric causes. The waste from the veins which traverse these rocks must necessarily form an infinitesimal portion of these gravels, &c. Mr. Nall's statement about shoad and shoading is equally erroneous. Shoading is simply a process of trenching into the rocks for the discovery of this lode or vein, where '*pees*' of lead ore have been found in the gravel, and not for the production of lead to supply a demand. Shoading, as practised in Derbyshire, is described by Hooson in his "Mining Dictionary," published in 1745; and this process of seeking for lodes is described by Carew, in his "Survey of Cornwall," in 1589. It has been little practised in Alston Moor, where shallow pits were sunk into the beds of plate or shale, and the ground between cross-cutted. The quantity of lead, obtained from the alluvial clays or gravel beds of Alston Moor, has been very small, and would not supply a demand for it at any period. In a field near the Hole Farm House, Tynehead, some works have been made a long time ago; but there is no indication of it having been streamed like the stanniferous gravels of Cornwall. Mr. Forster says that "it is a common thing, in some mining

countries, for the miners to go a shoading," which is true, for in *some countries* the ores of metal occur under conditions totally different from those in the carboniferous rock of Alston Moor.

After the Conquest the demand for lead would be greater than in Anglo-Saxon times, on account of the large quantities required to roof the numerous castles, halls, churches, and monastic buildings of that period. During Stephen's reign 1,500 castles were built in different parts of the country. I apprehend that it was about this period that many of the mines of lead in the north were first worked by miners brought from Germany * on account of their skill. There is some evidence that the Browngill veins were worked soon after the Conquest. A miner named Joseph Winskill found, in an old opening drift—in Browngill vein about Thoughtergill Syke,—made very near the surface, a number of iron tools of an antiquated form, very greatly oxidized. With these tools were found a few coins, which Mr. Salvin, the vicar of Alston, pronounced to be coins of the reign of William Rufus ; they might, however,

* Mr. Swan suggests that Blaygill affords corroborative evidence of a German occupation. The name is clearly Bleigill, otherwise Leadgill.

be left in the mine at a later date. It is not known to me what became of these coins. Winskill emigrated to America, and died there.

The first record of the silver mines of Carlisle, which were supposed to be the Alston mines, is in the oldest Pipe Roll known, dated 31st, Henry I., 1130, when the Burgesses of Carlisle rendered an account into the exchequer of 100s. for the rent of the silver mine, and in the same year, William, son of Hildert, the Sheriff of Carlisle, accounted to the exchequer for £40 (or 60 marks), for rent of the silver mine for the past year.

In 1226 the Northumberland Pipe Roll contains a charge against Erkenbald of £2,154 (3,231 marks) for the rent of the mine of Carlisle. In a charter, dated 1414, it is stated that the mine of Aldneston runs under the name of the Mine of Carlisle in the king's exchequer.† From the last charge for rent Mr. Nall concludes that the mines of Alston must have been very rich. He says that £2,154 of that age represents the large sum of £10,000 of our money. He however does not found his calculation on proper data. The

† Minerę de Aldneston, quę currit in scaccario nostro per nomen minerę Karliol.

value of the mark, as fixed by a convention between the Papal See and England, was four florins. The pound of gold being coined into 96 florins, would give a value of 10s. 9d. for such florin if the gold were pure 24 carats fine. The writer on money in the Encyclopœdia Britannica, 8th edition, says that the florin was worth about 10 shillings, consequently 3,231 marks would be worth £6,462 of our money, and at that period its purchasing power of labour and other commodities would be, according to the best authorities, about £40,000. I apprehend the above is a low estimate of the value of money at that period. Mr. Wade says that at the time of the Conquest a pound (sterling) contained three times the amount of silver that it does now, and the same weight of silver would purchase ten times more of the necessaries of life.

Mr. Hodgson, however, in an appendix to his history, states that long after the account of the Alston mines was printed off, John Hodgson Hinde, Esq., M.P., furnished him with interesting accounts of the rents and profits of the mines of Northumberland and Cumberland during the reigns of Henry II. and Richard I. The reader is referred to his history

for these interesting accounts. It appears, however, from them, that the great bulk of the mines of Carlisle was in Northumberland; for, in 1190, Allan, the moneyer, renders an account of £10 (15 marks) for the rent of the mines, which still remained in the king's hand, when he granted to Hugh, Bishop of Durham, the County of Northumberland, with its appurtenances, whereas the rent of the entire mines, the year before, was £100. At the rent of £10 the Cumberland portion of the mines was held three years. In the year 1193, after the king had resumed possession of Northumberland, the rent of the whole mines was fixed at £50, (or 75 marks) and so continued to the end of the reign. The localities in which some of the mines were worked in Northumberland are indicated in the following extract from J. Prior, of Hagustaldensis (Hexham), given in Ritson's Annals of Cumberland, page 221.

MCLIII. "Henricus Eboracensis Archiepiscopus . . . querelam facit apud Karleol regi David, super forestam suam quam vastaverunt homines regis qui operabantur in argentaria." "Henry Archbishop of York . . . made complaint at Carlisle to King David, on account of his forest, which the king's men who

worked in a silver mine wasted." At this date the Archbishop of York had no possessions in Cumberland. The franchise of Hexham belonged to him. It consisted of the parishes of Hexham, Allendale, and St. John's-lee.

I am, however, perfectly certain that no extensive mining works were made in the Manor of Alston at this early date. From the pains I took during many years to obtain information, the extent to which the mines were worked up to 1735, was well known to me when I left Nenthead. Much of the information was derived from plans made soon after this date, and from numerous plans made during more recent dates which I copied. I obtained much information from the numerous reports written about the time when the manor was granted to the Greenwich Hospital, and also from some of the old mine agents, who had opportunities, when the veins were opened into and re-worked, of ascertaining the dates of the ancient works from observations of the ancient modes of mining. It was my intention, in a history of mining, to show the extent of the works made in mines previous to 1650, up to 1735, and to recent times. The sections, I am certain, would have

shown clearly that, on the supposition that none of the mines had been worked previous to the Conquest, the yearly average quantity of lead produced up to 1650 must have been very small indeed. In the reign of Richard I. [1189-1199] the rent of the Cumberland portion of the Carlisle mines was only £10, or 15 marks. In 1356 the rent of the mines of Alston Moor was only 10 marks, and the amount of pure silver in the coins at this period was less than at the time of the Conquest. In 1414, in a grant of the mines to William Stapleton, the rent was fixed at 10 marks, and the value of the mark, at this period, was one-third less than in the reign of Richard I. In 1611 the mines were considered to be exhausted and worthless. In 1735 the annual value of the dues from 1715 to 1735 was estimated at £300 per annum.* In 1734 the dues were purchased by Mr. Wren, in behalf of the Quaker Company, for £200.

The ancient rents for the mines of Carlisle were not always paid. In 1166 the rent charged against William, son of Erenbald, was £333 6s. 8d. In 1174 the arrears of this rent, never discharged, amounted

* The value of lead in 1690 to 1736 was about £10 per ton. At this price the average quantity of dues must have been about 120 Bings, and 600 Bings the average quantity of lead ore produced between 1715-1735.

to £2,106 13s. 4s. In 1182 the additional arrears amounted to £333 6s. 8d. In 1189 the rent charged against Allan the moneyer was £100, in 1199 it was £50. In 1226 the rent charged against Erkinbald was £2,154 which is a very great advance.* Mr. Hodgson does not say that it was paid, only charged until 1272. It is probable that this large sum represents arrears. I possess no information on the state of the mines in Northumberland at this period. Lead mines, however, are property fluctuating in value, and it is not probable that this large sum would be paid yearly, at that period, for 46 years.†

* There is not much difference between the two names Erenbald and Erkinbald. It is possible that the latter may have been the son of the former and was charged with his fathers' arrears of rent.

In 1162, William, son of Holdgar, accounts for £22 for the mines of Yorkshire.

† Mr. Nall estimated the total quantity of lead ore yielded by the Alston mines at 5,000,000 Bings! He has certainly drawn very largely on his imagination. I have not the returns of ore-raising to enable me to test all his statements; but between 1787 and 1847—the ore-raising for 60 years,—his account differs from the Moor Master's account by 107,652 Bings. Yet in the same account he gives the total value of the lead ore produced to one farthing.

I think it is evident, from the charter of 1414, that the Stapiltons were owners of the manor, and obtained a grant of the mines at this date by a payment of ten marks annually. "Sciatis quod cum Willielmus de Stapilton Armiger et tenentes sui ad voluntatem de manerio suo de Aldenston." Were these tenants at will the miners? The copyholders certainly possessed full ownership of their property subject to the customs of the manor.

Mr. Nall has overlooked the accounts in Mr. Hodgson's appendix. In consequence, his paper on Alston, inserted in the Cumberland and Westmorland Antiquarian, &c., Society's Transactions, referred to above, is very erroneous and misleading as a history of mining in the Alston Manor at this early period. Mr. Ferguson has also made imperfect researches. He has drawn a conclusion from data which have no foundation. In order to do him no injustice I shall give an extract from his paper, in the same volume of Transactions, relating to the mines at this early period. After referring to the oldest Pipe Roll known,—the solitary one of 31st Henry I. [1130-1]—he says, "In his Pipe Roll the burgesses of Carlisle render an account into the Exchequer of 100s. for the old rent of the silver mine; and in the same year William, the son of Hildert, the sheriff of Carlisle, or Carliol, also accounts to the Exchequer for the rent of the Silver Mine for this past year." That this silver mine was at Alston is proved by subsequent records, which show that in the books of the Exchequer the silver mine at Alston, and those in the vicinity stood as the *Silver Mines of Carlisle*, a nomenclature which would naturally arise

through the rent being accounted for by Carlisle officials."

"We thus have, from the very earliest time of his making an appearance in history, the sheriff of Carliol, or Cumberland, dealing with the rents of the mine at Alston, and Alston, appears ever since to have been part of this county." In the above extract Mr. Ferguson makes no allusion to the fact that the bulk of the silver mines of Carlisle was situated in Northumberland. Any person reading it would understand the silver mines of Carlisle to be situated at Alston, or Alston and its vicinity, and never imagine that the terms embraced the mining districts of Cumberland and Northumberland.

As no mention is made of the mines in Alston Moor in the Pipe Roll, it is possible that the whole of the lead raised at that period (1130), and accounted for at Carlisle, might be raised from the mines of Northumberland.

A number of charters were granted at various periods guaranteeing the liberties and immunities of the miners. What these were does not very distinctly appear. From the two inquests held in Penrith in 1356 and 1415, it appears that juridical

cases in connection with the mines and miners were administered by a coroner as judge and a king's sergeant as sheriff and as head bailiff. We may almost infer that these cases were not judged in the same courts as those connected entirely with the pastoral people. This might be occasioned by the miners being under the protection of the King of England, while the owners of the shieldings continued to hold the courts introduced by the Saxon settlers before the miners were brought into the district, and also continued to render suit and service to the King of Scotland or to the Vetriponts.

The miners claimed the privilege of cutting down wood "to roast and smelt ore, and that it was lawful to take the wood for building, burning and hedging, and also to give it to the agents of the mine as wages, and for the rich people of the mine to give to the poor for their support." The miners also denied the right of the Lords of the woods, to sell or give any of it, excepting for reasonable estovers, when they required it for the mines, and claimed that they had such liberty in the woods adjoining the mines from time beyond which there is no memory. It would appear from the miners' repeated claims for protection

that they and the owners of the pastoral shieldings were not always on the best of terms. The owners of property near the mines would suffer much loss and damage and would receive no compensation. At the same time the property situated at a considerable distance from the mines would not suffer from the excessive privileges of the miners.

On account of the term 'Alston Moor' being applied generally to the mining districts of the North, the locality of the often-cited case, occurring in 1290, mentioned by Coke, of Henry de Whitby and Joan his wife, empleading Patric of the Gill and 26 miners at Alderstone for cutting down timber, is rendered somewhat uncertain.

In 1359 the mines of Alston Moor were held under lease under a certain rent of the freemen of that place by one Tilman of Cologne. It is not known how the freemen obtained possession of the mines. Tilman petitioned the Crown to protect him and his workmen, and, as in former times, obtained letters patent directing all the king's bailiffs to defend him and them while at labour in the mines, and not suffer injury or molestation of any kind.

As already pointed out, William Stapleton obtained

possession of the mines on the 13th November, 1414. On the 20th December, 1468, Edward IV. granted all the mines of gold and silver and other metals containing gold and silver to Richard, Earl of Warwick, John, Earl of Northumberland, and others. The Earl of Warwick was killed on Easter Sunday, 1471, in a battle at Barnet, in which Edward obtained a great victory. Another grant was made on the 23rd March, 1475, to Richard, Duke of Gloucester, the king's brother, Henry, Earl of Northumberland and others, of the mines of Shieldon in Blanchland, of Fletcheras in Alston Moor, and the copper mines near Richmond in Yorkshire. This appears to be the last transaction of the Crown in connection with the mines until 1717. After this grant (1475) nothing is known respecting the Alston mines for the next 136 years. In 1611 the rich deposits of lead ore in the Slate Sills had been very little worked, and even in 1736 the rich deposits in the Great Limestone were untouched excepting in the Blaygill Burn veins and in the Craig Green and Haggs veins near the surface. My impression is, that after the Stapletons got possession of the mines, very little ore was produced from them, until the latter part of the

seventeenth century, when some rich mines were worked in the district; for in an old report written by a Mr. Temperley, about 1690, it is stated that the Lord of the Manor had, for one year, derived an income of £10,000 from the Alston mines, and that lead was worth about £10 per ton. This statement is probably incorrect: for Mr. Watson, in a report dated 18th July, 1835, states that the Lord's dues were formerly from £1,000 to £4,000 per annum, and that the Derwentwater family charged one-fifth dues. In 1690 and following years, Rampgill vein was worked in the Slate Sills and partially in the Firestone. Greengill and Briggleburn mines also produced much lead in the Slate Sills. In the Greengill mines the rocks had been much broken up by the glaciers which descended from Nunnery: consequently the miners would obtain large quantities of lead ore with little labour.

Mr. Hodgson, to whom we are greatly indebted for our knowledge of the early history of mining, states that in 1177, 500 carects of lead were sold to brother Scriven for the church of Clarville, for £66 13s. 4d. [100 marks.] I apprehend there has been some error of transcription, and that the 500 carects ought to

be 100; for only two years afterwards 25 carects were sold to the church of Clarville for 25 marks. From these sales and a few others given by Hodgson, a carect of lead was worth one mark. According to the tables in the Encyclopœdia Britannica it would equal £2 1s. 1d. of our present money. In relation to the value of labour and food it would be worth about £13. According to Bailey, a *Carectata plumbi* weighed 2,100 pounds. The charrus of lead was an element of weight in the Anglo-Saxon times. It contained 2,100 avoirdupois pounds, and divided by the old hundred, *i.e.* 108 lbs., will be found to contain nearly 19½ hundred, that is the modern fother or fodder.* It would appear that there was some connection between a carectata† and a charrus of lead. It is therefore probable that lead in the 12th century was worth about £14 per ton. If the carectata was 2,100 Saxon pounds it would be worth about £18. Iron, at this period, was worth not less than £70 per ton of our money.

* Brand's Dictionary.

† In the mediæval Latin Dictionary in my possession, carectata denotes a cart load. I suppose carecta is a contracted form of this word, as it does not occur in the dictionary. Hodgson says that 55 carectats, or pigs of lead, was furnished to the Sheriff of the County, to carry apud Cadomum [Caen] where William the Conqueror was interred.

Mr. Sopwith says that Alston in the time of Edward III. "had not only mines but a mint also." This is incorrect. It appears that an error was made in the printing of Mr. Petrie's copies of the records, which was however corrected in an errata to the Calendar. The word *monetariis—coiners*, was erroneously substituted for the word *mineatoribus—miners*.

After reading carefully the old charters—since the above pages were in type—it has become evident to me that the accounts of the Cumberland mines were separated from those in Northumberland in 1228, and that the rent for the former was then fixed at ten marks annually, and charged until 1336. This was the rent in 1356 and also in 1414, and there is no evidence of a higher rent having been charged during the 189 years; for in the charter of 1414 it is stated that "Willielmus de Stapelton Armiger . . . antecessores sui domi diete manerii et eorum tenentes ad voluntatem de manerio a tempore quo non extat memoria annuatim solverint et adhuc solvant ad scacarium nostrum Karliol decem marcas pro minera de Aldneston, que currit in scaccarium nostrum Karliol, eo non obstante quod dicta minera per quinquaginta unnos et amplius cessavit et defecit . . . . in ipsorum depauperationem et dispendium." It is also evident from the above extract that the mines, for fifty years or more, had been profitless to Stapleton and his predecessors. From a comparison of dates it is certain that the rents or arrears charged against Erkinbald during the years 1226 to 1272 were for the mines of Northumberland; and that the charges were annually made in the Pipe rolls of this county, during the same years that the rent of ten marks for the mines of Alston Moor were paid, and probably the payments generally entered in the Pipe rolls of Cumberland.

THE MINING COMPANIES.

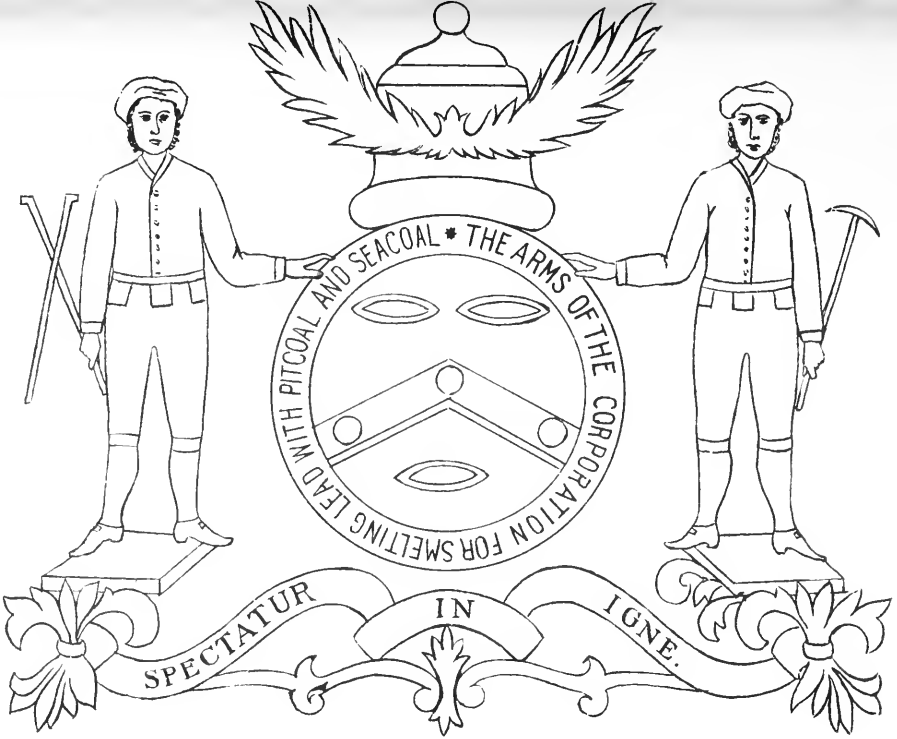
We now propose to give a brief history of a few of the principal Mining Companies which have been formed to obtain lead from the veins of Alston Moor. A history of all the lessees who have obtained grants would be tedious and uninteresting to the general reader. We shall state facts carefully, and, if possible, give the dates of their occurrence.*

The London Lead Company was formerly known as the Quakers or the Quaker Company, and at a later date as the Governor & Company. There is no documentary evidence known to be in existence bearing on the origin of this old and much respected Company, whose works were in Bristol. They obtained a charter, dated October 4th, 1692, for smelting down lead with pit coal and sea coal.† At that

* For a list of the lessees of the mines in the Earl of Derwentwater's time, see Appendix No. II.

† The following gentlemen formed the first court :—

Richard Owen, Governor	Thos. Addison, Assistant	John Henty, Assistant
George Moor, Deputy Govnr.	George Clarke, do.	Matthias Cupper, do.
Constantine Zernatty, Assnt.	Thomas Boon, do.	Richard Adams, do.
Francis Baker, Assistant	John Moor, do.	John Frank, do.



THE ARMS OF THE LONDON LEAD CO.

Drawn from a Sign painted in London in 1827, for the Miners' Arms Inn at Nenthead

period their business was restricted to smelting; but whether their operations included tin and copper is not known to me. From 1695 to 1704 their works were stopped, the Company having collapsed. It is on record that the Company, in 1704-5, amalgamated with the Royal Copper Mine Company, in Wales, and the Ryton Smelting Company, in Alston Moor. There is no such place as Ryton in Alston Moor, though it is probable that the principal portion of the lead ore smelted at the Ryton Company's mill was raised in Alston Moor. I suppose the smelting works were at Ryton, six miles above Newcastle. The date when they were established is not known.

Though "there is no record when it originated, the tradition is that it was set on foot by some Quakers preaching, who in visiting the northern valleys (Allendale is one I have heard named) were struck with the poverty of the miners, and suggested to their friends, on their return to London, what a kindness it would be to subscribe a little capital so as to furnish the miners with regular employment. Upon this a number of Friends chiefly, raised a sum of money, in, it is said (for it is not certainly known) £5 shares, and from this beginning arose the Com-

pany which, in due time, obtained a charter and has continued down to the present time. For many years it was known, and indeed is so still, as the Quaker Lead Company, and till lately there has always been a number of Friends or ex-Friends on the court. I give this tradition, which I had principally from old Mr. Edward Pease,* whose grandmother remembered the revolution in 1688, for what it is worth; but I confess it does not altogether tally with the official records of the company."†

Nothing is known, that I am aware of, respecting the Ryton Company; but I am inclined to suppose the tradition derived from Mr. Pease refers to this Company. After it amalgamated with the Bristol Company it would get the benefit of the charter. For it is improbable that a Company formed to benefit northern miners would establish works near Bristol. And unless the Company was a very large one (which is improbable), the subscription of £5 shares would not benefit the miners much; though by establishing better works for smelting lead ore than existed at that period in the north, the miners might obtain higher prices for their lead ore.

* Mr. Edward Pease died at Darlington, on the 31st July, 1858, aged 92.

† Letter from I. Braithwaite, Esq., London, dated 15th January, 1886.

After the two companies were established in Alston Moor, they were soon led into mining speculations on their own account. In the Earl of Derwentwater's time, they worked Browngill and Thoughtergill Syke veins, and purchased from T. Errington, Esq., the lease of Blaygill mine for £1,600. Their lease of this mine had expired in 1736, for at this date it was advertised to be let with the principal veins in the manor.

At the above date the Governor and Company applied for grants of Redgroves, alias Rampgill, Thoughtergill Syke, Browngill, Blaygill, and Windy Brow veins. They had no competitor for the last vein, and they did not succeed in obtaining grants of the other veins. I apprehend that Colonel Liddle got a grant of Browngill and Thoughtergill Syke veins, and afterwards was at the expense of making a considerable length of level, from Garrigill Burn, to drain these veins. This level is still known as the Colonel's level. Bowman, Smith, & Company were the only competitors for Blaygill vein; and I suppose it passed into their hands.

The rich mines discovered in the Great Limestone in the Coal Cleugh mines by Sir W. C. Blackett,

induced the Commissioners of Greenwich Hospital to reserve Rampgill vein for trial on their own account. They commenced a level near Nenthead, and continued it to the east side of the principal Nenthead Cross veins, where the level is on the top of the Great Limestone, and, consequently, must rise rapidly. They sunk a sump into the vein in the Great Limestone, at a point where the vein contained very little lead ore. Probably disappointed with the results, the Commissioners leased off the vein to Colonel Liddle; he, however, only kept it in possession six months, when it fell into the hands of the Governor & Company; probably by purchase, in 1745, as the plant would possess some value. I am inclined to suppose, from the dates of their works made in the Browngill mine, that they obtained possession of it about the same time.

The Governor & Company continued the Commissioner's level a few fathoms further east, and sunk another sump into the Limestone. The vein proved to be exceedingly rich from this point to the boundary of the manor—a distance of about 300 fathoms. It was considered so valuable that Mr. Smeaton was employed, in 1763, to fix the boundary

between Sir W. Blackett and the Greenwich Hospital's Manors. In Browngill vein, on the east side of Thoughtergill Syke, rich deposits of lead are said to have been discovered in the Little Limestone, and Coal Sills soon after they got possession of the mine. They had possession of the Middle Cleugh veins in 1758. After the discovery of these rich mines their agents were very active in obtaining grants of mines. A great number of the veins in the manor have, at one time or another, been in their possession.

In 1736 the Governor & Company had established extensive works in Scotland, Ireland, and Derbyshire, and other parts of the kingdom; and during the latter part of the last century, and in the present, in Durham, Westmorland, and Yorkshire. I have not been able to obtain the date of their possession of the Derwent mines, which were abandoned, I believe, in 1811-15.

In 1724 they built a Friends' Meeting House at Wellgill, near Nenthead; and it is probable that a Friend's Meeting House, at Alston, was built about the same period, or at an earlier date. Burial grounds were attached to each meeting house; but there were only seven interments in the one at Wellgill. The

Governor & Company did much to promote the moral welfare of their workmen, and incurred much expense in erecting schools in connection with their works. They also contributed liberally to other schools in the country.

On the 31st December, 1883, they sold their mines and all their property in Alston Moor, to the Nenthead and Tynedale Lead and Zinc Company: and thus terminated their connection with the Alston Moor mining district which had lasted for 179 years, and probably with the Ryton portion of the Company for about 200 years.

Mr. Adam Wilkinson applied for a grant to work mines on the 18th June, 1754. This application was for Caple Cleugh North vein. He, at various periods, obtained possession of other veins in the locality traversed by this vein. One of the old agents at Nenthead informed me that his dividend from the mines, for one year, was £10,000, which is not improbable. At Michaelmas, 1780, his mines passed into the hands of Henry Errington & Company, partners whom he had taken in some time previously; and were sold by them to the Governor & Company at Michaelmas, 1799.

Mr. Wilkinson was a remarkable man. He was the son of very humble parents. It was traditional among the old miners at Nenthead that he was born in a hut on Caple Cleugh Moss, his mother being then employed in collecting ore from the waste heaps. At the period when he was born, and long afterwards, there was much poverty in Alston Moor. Mr. Wilkinson could not write, he was entirely dependent on his agent, Mr. Robert Hodgson, for the management of his accounts. He had probably been successful in mining soon after the manor came into the possession of the Greenwich Hospital; for he purchased a portion of the Fairhill or Cherrytree-hill estate at Nenthead in 1749. His name does not occur among the list of lessees in the Earl of Derwentwater's time. He died on the 10th January, 1790, aged 70 years. His wife Elizabeth survived him 20 years, and died at the advanced age of 87. His family consisted of three sons and three daughters. The sons died young in 1772. Hannah died in 1779, and Mary in 1817, aged 63. The other daughter is said to have married a Mr. Fisher who resided at some place in the vale of the Eden.

Fletcheras vein, like Browngill vein, was probably

worked at an early period in the Slate Sills, near the surface, in which stratum by far the richest deposits of lead ore in this vein were found. We have already stated that the mine was granted to the Duke of Gloucester, Henry, Earl of Northumberland, and others, in 1475. Nothing more is known of this mine until it was worked by Samuel White, under a tack note, granted by the receivers of the Earl of Derwentwater's estate, appointed by Government. It was not let in 1736. It was applied for by John Smith, in behalf of the Governor & Company, on the 30th November, 1753. I apprehend the Whimsey shafts were sunk by this Company, and the Great Limestone level begun and extended to 16 fathoms beyond the High Whimsey. No lead ore of any importance was found in the Great Limestone. Whether the Governor & Company's mining works were successful or not I have never been able to learn. On the 20th June, 1772, the mine was in possession of Mr. Monkhouse, a wine merchant, of Newcastle. It was included in the general lease obtained by the Earl of Carlisle & Company, in 1778, and was bought by the Governor & Company in 1798, as a part of the Earl of Carlisle & Company's property. The follow-

ing are the quantities of lead ore produced from this vein by the different lessees since 1778. By the Earl of Carlisle, 377 bings 6 cwt. By the Governor & Company, during the years 1799 to 1811 inclusive, 548 bings 2 cwt. By Messrs. Joseph Hutchinson, Thomas Hetherington and George Graham, during the years 1812 to 1836 inclusive, 2,734 bings 2 cwt. This lead ore was raised from sun strings in the Slate Sills. Thomas Holmes & Brothers raised 128 bings 2 cwt. from the vein in the Scar Limestone, on the east side of the Tyne, during the years 1834 to 1839 inclusive, and by Alfred Hall & Company, 255 bings 2 cwt., during the years 1837 to 1848 inclusive, making a total of 4,043 bings 6 cwt.

The Brownly Hill mine was worked to some extent in the Slate Sills before 1735. A short time before this date it was in the possession of Alderman Ridley. At the general letting of the mines in 1735 it was not offered for by any speculator, and was considered to be worthless by the agents of the Greenwich Hospital. In 1748, Mr. Thomas Westgarth obtained a grant of the principal vein. It was again leased by Messrs. William Armstrong and William Hutchinson on 16th December, 1765, who

raised very large quantities of lead ore from the cross veins, and the principal east and west vein. The mine remained in the possession of Mr. Hutchinson until 1795; it then fell into the possession of the Brownly Hill Company, who sold the lease to Messrs. Jacob Walton and Thomas Shaw in 1816. Since that period very considerable quantities of lead ore have been raised from the mine.

The Grassfield mine was opened into in 1803, and during the succeeding seven years produced 21,905 bings 5 cwt. out of the principal vein. The yearly quantity of lead ore raised in the lower beds and from the cross veins was only small, or an average of nearly 319 bings per annum for 44 years, after 1810. Some of this lead ore was probably raised from the principal east and west vein. The total quantity of lead ore raised from this mine up to 1885 inclusive was 37,086 bings 3 cwt. Very little lead ore has been raised from this mine during the last 30 years.

The first application, to work mines, in behalf of the Earl of Carlisle & Company, was made by Mr. Thomas Ramshay, on the 22nd June, 1771. A number of veins on the Earl's behalf were leased shortly afterwards. On the 24th of May, 1777, Mr.

John Gilbert, accompanied by Messrs. John Cleaver, Joseph and Jonathan Hilton, three of the Earl's partners, applied for a lease of a considerable extent of mining ground situated on each side of Middle Fell. They proposed to Messrs. Walton and Smeaton to make two navigable canals, one below the Tyne and the other on the west side of the Nent river. On the 30th May, 1778, they obtained this lease. Mr. Gilbert's plans of these proposed works were once in my possession. On these plans the underground lough or canal on the Tyne was drawn to begin on the east side of the river, a little below Middle Craig farm houses and continued in straight line to Garrigill burn, passing directly under Low-houses old manor house. From this point, in a straight line to 40 fathoms on the east side of Crooks farm house, and from this point in a straight line to a point 40 fathoms on the east side of High Lee house, and to 20 fathoms north of the Priorsdale boundary. The other lough or canal was shown to commence at the junction of Gallygill Well syke with the Nent river, and continued in a "straight line through Greengill veins, at their intersection with Greengill Moss vein with the other veins." An

attempt was made to construct the canal on the Tyne. An Engine shaft was sunk at Beldy Gin, to the position of the canal at this point, and a portion of the canal was made in the direction of Lowhouses for about 60 or 70 fathoms. The section of this adit or portion of the canal was nine feet square. It was made in an unbroken sheet of the hardest basalt. According to information derived from William Thomason, this portion of the canal cost £70 per fathom. As the whole extent of the canal from Lowhouses southward would have been chiefly, if not altogether, in this stratum of basalt, had it ever been completed, its total cost would have been not less than £150,000. Mr. John Gilbert was the managing agent for the company. The shareholders were the Earl of Carlisle, the Duke of Bridgewater, Earl Gower, John Royds, John Gilbert, Thomas Gilbert, John Gilbert, junior, Robert Gilbert, Jonathan Hilton, Joseph Hilton, and John Cleaver. It was talked in our family when I was a boy that my grandfather, William Thomason, and John Gilbert were both employed in the construction of the Bridgewater canal and that they both came into Alston Moor about the same time. Mr. Cleaver

resided at Kinderskalf in the North Riding of Yorkshire. I have not obtained any information respecting the Hiltons.

The Earl of Carlisle & Company were not successful in their mining speculations in Alston Moor. The total quantity of ore which they raised in the district amounted to 4,157 bings 1 cwt,* or an average of only 259 bings 7 cwt. per annum.† On June 26th, 1798, they sold their mines and all their plant, house and land property to the Governor & Company.

The Hudgill Burn east and west vein and Hudgill Burn Cross vein were leased by the Governor &

* The principal portion of this lead ore was raised from the Hill top veins in the Tynebottom Limestone.

	Bings.	Cwts.
Ore raised by the Earl of Carlisle & Company on the east side of the Tyne	3,171	$4\frac{5}{20}$
Ore raised by the Earl of Carlisle & Company on the west side of the Tyne	295	
Total ..	3,466	$4\frac{1}{4}$
Raised by the London Lead Company east of Tyne river	269	7
Do. do. west do.	6,633	1
Raised by the London Lead Company from Windshaw Bridge vein	18,426	$3\frac{1}{2}$
Raised by Messrs. Matthew & Israel Nall from Windshaw Bridge vein	26	1
Total quantity of lead ore raised from the Tynebottom mines	28,822	$0\frac{3}{4}$

† In addition to the above ore raising, the Earl of Carlisle, Mr. Cleaver, and the Hiltons raised 901 bings 7 cwt. from Greengill West End mine.

Company in 1799. They abandoned the mine in 1808, having been totally unsuccessful in the works they had made, to find lead in these veins in the lower beds. About the same period, the Flow Edge Mining Company was probably making trials for the discovery of Flow Edge vein, on the north side of Middle Fell, in the Great Limestone. After spending £1,929 the works were abandoned, and the mine neglected for about eight years. In 1812, Messrs. John and Jacob Wilson & Company obtained a grant of the mine, and in 1814 discovered one of the Hudgill veins which contained rich deposits of lead. Mr. Sopwith says that the clear profits to the proprietors is supposed, for many years, to have averaged £30,000 per annum.* The total quantity of lead ore raised from this mine from 1815 (the first entry) to 1885 inclusive is 136,603 bings 5 cwt. According to Mr. Sopwith, the value of the silver in 1821 was £8,400. The produce of lead for this year was 11,580 bings. In the same proportion the total value of the silver raised from the mine, exclusive of the Lords' portion, would be about £99,000, or with the Lords' portion £118,000.

* Mining Districts, page 123-4.

Rodderup† Cleugh, or the east portion of Rodderup Fell vein, was applied for by Jonathan Thompson on the 24th May, 1794; and again by John Wilson on the 18th October of the same year. I have not made enquiries respecting the works made at a later date which resulted in the discovery of rich lead ore deposits in Rodderup Cleugh west end, or Rodderup Fell mine. This mine has been considerably more productive in the lower beds than any other vein in Alston Moor; and, as shown on my published map, this rich deposit of lead occurs in that portion of the vein towards which Browngill, Bentyfield, and Hundy Bridge veins point and break up in their direction westward. From an inspection of the map it will be observed that similar conditions hardly exist in any other part of the Alston Manor. I understand the expectation of finding lead below the Company's lowest level or in the Whin has not been realized. The lead ore first raised from this mine was accounted for in 1827, and

† This is the spelling of this word on the oldest plans which have come under my observation. On the ordnance maps it is spelled Rotherhope, which is probably correct, and that the former is a corruption of the latter. According to the dictionaries, Rother means horned cattle. Mr. Swan suggests that it may mean red—Rotherhope, the Redhope.

from this date to 1885 inclusive, 111,920 bings 3 cwt. of lead ore have been produced.

The Craig Green mines were leased by Messrs. Utrick and John Walton. During the period they had the mines in possession, extending from 1792 to 1812 inclusive, they raised 14,013 bings 4 cwt. At later dates small quantities were raised by other lessees from these mines.

The Flow-edge mine lease was held by Messrs. John Walton and Company.* They raised 13,373 bings from the mine. The principal portion of this lead ore was raised during the years 1801 to 1807 inclusive.

The Holey Field mine was partially worked from 1793 to 1803 by Thomas Stephenson and Joseph Parker. They raised 351 bings 3 cwt. It was leased in 1815 by Joseph Bowman & Company. From 1816 to 1855 inclusive, 20,509 bings 5 cwt. were raised.

A length of 100 fathoms, north from the Priorsdale boundary, of Black Ashgill cross vein, was leased by James Johnstone & Company in 1792. From this

* I believe the lease was first obtained by Messrs. John Bradwell and Shaw, November 6th, 1790.

portion of the vein 8,856 bings 7 cwt. were raised. The vein was only productive in the Great Limestone. I have not seen any accounts of the lead ore produced from the Ashgill portion of the Priorsdale Manor. Undoubtedly a considerable quantity of lead ore was raised from the Black Ashgill cross veins in this manor. The Black Ashgill mine was sold to the Lead Company, on Lady-day, 1813. Ashgill Field veins were worked in the Scar Limestone, and Littlegill vein in the strata above the Great Limestone, from about the middle to about the end of the last century. Mr. Leonard Bradwell was the agent at both places. Unsuccessful trials were made at the head of Littlegill by Adam Wilkinson. Windshaw Bridge cross vein was worked in the Scar Limestone by stook and feather near the Planter's House, by a family of the name of Coats, in the seventeenth century.

The produce of lead from the Hole Liberty has been small. Messrs. Stephenson, Elliot, & Hopper, held the Windy Brae vein under lease from August 13th, 1779, to 1795 inclusive. They raised 1,387 bings 7 cwt. of lead ore. From the last date to 1813, 283 bings 6 cwt. were raised by Nicholas

Hopper. From 1813 to 1855, 170 bings 6 cwt. were produced by Messrs. Thomas Pearson and Thomas Greenwell, and by Messrs. J. Walton & Co., 158 bings 2 cwt., making a total of 2,000 bings 5 cwt.

In the Hill Liberty, Crossfell was the most productive mine. The lead ore was raised from the veins in the Great Limestone and strata above. The following is a statement of the total quantities of lead ore raised in this portion of Priorsdale, from 1811 to 1855 inclusive; which (excepting the Crossfell mine) comprehends the period in which mining has been most actively prosecuted:—

	Bings.	Cwt.
South and West Crossfell . . .	12,354	7
East and West Calvert . . .	4,565	4
Stow Cragg North end, Sir John's Vein*	4,306	5
Clargill head	629	2
Teesside	3,328	5
Dosey	2,910	5
High Tyne Green	388	4
Middle Tyne Green . . .	731	3
Lady's Vein	137	0
Metal Band	230	1

* Probably Sir John Myers, a speculator in mines in the Earl of Derwentwater's time.

	Bings.	Cwt.
Stow Cragg South end, Sir John's Vein	419	6
Murton's Vein	5	4
Patter's Sykes	134	0
Sir John's Vein		3
Allen's Cleugh	34	6
John's Burn Head	17	3
East Broad Mea	135	3
Crossgill Pants	1	5
Dow Green	4	4
Allen's Hills	78	4
Green Banks	14	7
Total . . .	30,429	1

If we deduct 12,354 bings 7 cwt. from the above total we have 18,074 bings 2 cwt. remaining as the produce from all the veins in the beds below the Great Limestone; an average of 401 bings 3 cwt. for each year, or an average of 20 bings for each mine.

In addition to the lead ore, 856 tons 2 cwt. 1 qr. of copper ore pyrites were raised from Stow Cragg mine, from Sir John's vein. Had the Great Limestone occupied the position of the Tynebottom

Limestone on the south side of the Great Sulphur vein, and the position of the Scar Limestone on the north side, it is very probable that large quantities of lead ore would have been found deposited in the veins of this manor. The results of the above forty-five years of mining, and the results of mining in Ashgill field and the Tynebottom veins, and elsewhere in the Manor of Alston, render it not improbable that more lead ore has been obtained from Rodderup Fell vein than from all the other veins in Alston Moor traversing the strata below the Great Limestone.

I am unable to give complete returns of the lead produced from the rich veins of the Nenthead mines, Brownley Hill, Dowgang, and several other mines which were worked about the middle of the last century and at an earlier date. The returns in my possession commence in 1780 and terminate in 1855.

Mr. J. C. Swan informs me that Blaydon is in the Parish of Ryton, and that it is certain the Ryton Smelting Company would not establish their works in the village of Ryton, up on the hill, when they had so tempting a site in the Parish as was available by the water side at Blaydon. The two places are close

together, and Blaydon is the first place, going down to the sea, at which the River Tyne is navigable. It is the most natural site for works which had to deal with the lead products of the mines of the dale of Derwent, of the Allendales, of Northumberland, and of Alston Moor. The existence of smelting and refining works at Blaydon would give much strength to the supposition that the origin of the name Blaydon was Bleidon or Bleiton, from which it may be inferred that lead was smelted and refined there at a remote period, perhaps in Anglo-Saxon times.

Blaygill or Bleigill mine has evidently been worked at a remote period. Woodmass, a miner, told Mr. Swan that when he was working as a washer boy at this mine, old ropes made of plaited leather were at times sent out with the bouse stuff and deads from the old workings. He had also seen horns of deer come from the workings. The hills had evidently been the home of wild deer which occasionally fell down the unfenced shafts.

Mr. Swan sent the above information after the preceding portions of the section were in type.

ON THE MODES OF MINING IN ALSTON MOOR.

The extraction of lead ore from the veins of Alston Moor, in ancient times, was simply to sink shallow pits or shafts, and then work downwards to the bottom of the lead ore deposit in each stratum by stouping.

No word could be more expressive or more applicable to this process of mining. The word is evidently derived from one of the meanings of the Saxon *Stupian*—to *stoop*—that is, to sink to a lower place. The word *stoupins*, derived from the same root, is used in the North of England, to denote the holes made by the feet of cattle. The tools used in ancient times were probably very simple ones. A few years ago some very rudely constructed tools were found in some very old works, made in the Silver Band mine; one of them was a wooden spade. In the Tyne Green mines, as I have been informed, a large stone hammer was formerly found, near the

surface, the remains of a rope formed of leather, and a wooden spade. A wooden spade was also found in the Nether Hearth mines. The Egyptians worked copper mines at Särabet-el-Chadem and Turquoise mines at Maghara, with stone hammers, flint chisels, and wooden mallets. These stone implements were very rudely constructed. From the description of the town of these ancient miners, it is evident that, like the miners of comparatively more recent date, they dwelt in '*Shelis*.' Stone hammers precisely similar to the above have been found in the old copper mines, worked by the Aborigines, on Lake Superior, in Canada, which are usually known and described as Azec hammers.*

At the present time, in the silver mines in Kongsberg, in Norway, and, I believe, in some mines in Switzerland, the rocks are fractured with fire. It can only be employed when the ventilation is good. Large quantities of wood are placed against the rock and fired. I have been informed that in one or two places, near the surface, in the Briggleburn mines, Nenthead, remains of fire have

* See an interesting article entitled the Peninsula of Sinai, by Mr. J. K. Lord, in the "Leisure Hour," vol. for 1870.

been discovered. This mode of mining, as it was formerly practised in Derbyshire, is described by Mr. Hooson, in his mining Dictionary. The difficulty of obtaining metals enclosed in hard rocks or hard earthy minerals, with the common pick, hammer, and wedge, would be very great. The adoption of the stook and feather process of fracturing hard rocks, though a slow and laborious one, must have been a great advance in the art of mining. The *stook* was the drilled hole in the material to be displaced, *the feathers* consisted of two pieces of iron, four or five inches long, the sections of which were segments of circles, and were rather thicker at the ends first introduced into the stook or hole. Between these two pieces of iron a thin wedge of iron, with a sharp or flat point was introduced. I have found them still remaining in the drilled hole, the force of the wedge having been insufficient to fracture the rock.

I give this explanation of the terms *stook* and *feather*, on the authority of Mr. Hooson, who evidently had a practical knowledge of this process of mining. I am inclined, however, to suppose that the word *stook* is a corruption of the word *strook*, the past

participle of the old Saxon verb *astrican*, to smooth, to rub over, to slide, &c. The other word is the Saxon fether—a substantive, probably allied to a Greek verb, which means to expand, to open, &c. Thus explained, the two terms convey a very accurate idea of this process of mining.

The application of gunpowder revolutionized the art of mining. It was first applied in Hungary, about the year 1620, and shortly afterwards was introduced into England by some German miners, brought over by Prince Rupert to work the Ecton mines, in Staffordshire. It was in use in Somersetshire about 1648. It does not appear that it was used by the Cornish miners until towards the end of seventeenth century. There was probably very little mining in Alston Moor during the greater part of this century. It was, therefore, not before 1680 or 1690 that it was partially used in this district. When first applied in Alston Moor, the gunpowder was confined in the drilled hole with an iron plug, about four or five inches long, which had a groove made in it for the squib. I have found these plugs, and similar ones made of wood, in the refuse left in the old works. The use of iron, for this purpose, would

be dangerous, and would occasion accidents. In Derbyshire the gunpowder was confined with two feathers and a wedge; by this mode it appears that the miners were often killed, or seriously injured. Tamping was not adopted by the Derbyshire miners until towards the middle of the last century. This mode of confining gunpowder in the hole was contrived and adopted by the Hungarian miners.

It was not before the middle of the last century that the mines were first opened out and drained in a systematic way. Levels from the surface were made on each important stratum, and on the thrown down cheek or side of the vein. From these levels short cross-cuts were made and sumps sunk into the vein, and its contents mined by '*stoups.*' Bunnings—a kind of scaffolding—were fixed above the heads of the miners in the portion of the vein from which the ore had been extracted, and the refuse or '*deads coated*,'* that is, placed upon it. The richest portion of the vein is generally near the top of the stratum. These levels were connected with whimsey shafts; some of them were sunk to a perpendicular depth of sixty fathoms; Mr. Nall says 100 fathoms, but I am

* This word is probably Anglo-Norman, meaning to put aside.

not aware of any shaft sunk perpendicularly to this depth in Alston Moor.

During recent times, opening drifts or levels have generally been driven at the bottom of the ore deposits, and the contents of the vein worked out in headings. As these headings advanced upwards, the space below was filled with deads or refuse. This method has advantages over the method of '*stouping*'; but unless great care is exercised in making and taking up floorings, there is a considerable loss occasioned by the lead ore crushed fine with blasting, &c., falling into the interstices of the deads or refuse.

The bouse and deads drawn up the sumps in kibbles or strongly made pails, were formerly carried by hand through the cross-cuts to the shaft up which they had to be drawn. The adoption of tramways and waggons for this purpose was a great advance on the process of '*kibbling*,' which was very expensive. After good levels were made, and rails laid in them, the bouse—and deads for which there were no room in the mines—could be drawn to the surface with horses. By this method, one well-constructed washing floor is sufficient for an extensive mine.

The facility for draining the mines by levels from the surface rendered engines in a great measure unnecessary; in consequence, only few have been erected. The first hydraulic pumping engine in the Manor of Alston was, I believe, erected in Rampgill mine about the year 1768. Another at a later date was placed at the bottom of the engine shaft, to pump water from Scaleburn vein, in the Great Limestone, and from the works made to prove Rampgill vein in strata below the Great Limestone. The hydraulic engine was first invented in Germany. It was, however, re-invented in 1765 by Mr. Westgarth, agent for the Coal Cleugh mines; for it is probable he possessed no knowledge of the German engine.* A history of this invention, written by Smeaton, may be found in the "Transactions of the Society of Arts." Mr. Nall says that Sir W. Armstrong invented the hydraulic engine; he, however, only made important improvements in it. Two of Mr. Westgarth's engines were erected in the Middle

* I do not know the period when the hydraulic engine was invented in Germany. A water engine was placed in the Goldscope mine, near Keswick, by some German miners in Queen Mary's reign (1553 to 1558). If this was an hydraulic engine Mr. Westgarth may have been acquainted with some traditions respecting it.

Cleugh mines, and both were in operation in 1784. One was erected, at a later date, in the Crossfell mines.† About the year 1814 or 1815, the Commissioners of Greenwich Hospital commenced to make trials for the discovery of copper ores in the Great Sulphur vein, where it crosses Crossgill Burn. After a level was made to the vein under the Scar limestone, a sump was sunk to a considerable depth in the vein. Not succeeding in their attempt to discover copper, the mine was abandoned. Their works were re-opened by a Messrs. Cookson & Co., Newcastle, to raise sulphur pyrites. An hydraulic engine was placed in the Commissioners' shop; sulphur, however, could not be raised profitably, and the mines were only worked for a short period. An engine of this kind was placed in the Bentyfield mine by, I think, Mr. Dinning and partners.

Mr. Smeaton, in a letter dated 1769, states that four of these engines had been erected in the neighbourhood of the Coal Cleugh mines. The Earl of Carlisle & Co. placed the first water-wheel for pump-

† About the year 1866, a graphic description of the working of these old hydraulic engines appeared in "Chambers' Journal," entitled "My first (and last) descent into a Lead Mine, in 1836." When the article appeared, the engine described was supposed to be the one erected in the Crossfell mines.

ing water in the manor. It was built for the Tyne-bottom mines in 1780. At least I know of none built at an earlier date, in connection with the mines. In 1315 there was a '*corn water mill*' at Alston. The power required would undoubtedly be derived from a water-wheel.

THE WASHING PROCESSES.

It is not the object of this small work to give even an outline of the various processes of separating the lead ore from the minerals, of various kinds, with which it is always mixed in a greater or lesser degree. The old processes were very simple ones. After the bouse was brought out of the mines, the larger pieces were "shaddered"*—that is broken into small pieces, and during this operation all the pieces of pure lead ore were picked out and carried into the bing-stead, and the worthless minerals carried away as refuse. The remainder of the bouse and the broken stuff was then washed in a buddle, upon which the fine or smaller pieces were washed down from the head to the bottom of the buddle. The rougher pieces at the head of the buddle were again subjected to a careful hand-picking. Grating was afterwards substituted for this process, but the object to be attained was the same. The pieces of vein stuff in which the lead

* The word "*shad*" is used in Lancashire in the preterite tense, and means divided.

ore was intimately blended, were crushed with a "*bucker*"—a kind of flat hammer, and the ore was separated from the refuse in a hand sieve, worked in a tub containing water. The particles which passed through the sieve were subjected to another operation in the sieve, and the ore was made pure by buddling. One of the first improvements was the stamp mill, introduced by Richard Trathen, a Cornishman, in 1796. It was erected at Nenthead. The Crushing Mill was soon after erected at Craig Green mine by Mr. Uttrick Walton. Since then very many important improvements have been made, and those have been superseded by others. These various processes could not be described or understood by the reader without the aid of elaborate drawings, and even with this aid they would be imperfectly understood by many persons.

ON THE SMELTING OF LEAD IN THE DISTRICT.

THERE are no remains of ancient smelting works in Alston Moor; nor any traditions of such works having been once in existence. The considerable quantities of lead ore raised in Alston Moor towards the close of the seventeenth century could not possibly have been smelted and refined on the Bayle Hills. In the few places, where lead ore has been smelted in the open air, which have come under my observation, the quantities operated upon must have been small; if we may be permitted to form an opinion from the small quantities of scoriæ left on the ground. I have long suspected that the principal smelting works, during the earliest periods, were situated on the lower part of the Tyne, or near Newcastle.* I possess no information respecting the exact date of the formation of the Ryton Smelting Company, but that it

* Mr. Swan suggests that the first four letters of *Blay*don (situated on the Tyne, a short distance below Ryton) may be *Blei* or Lead. If the "d" has been substituted for "t" the name would be, in English, Leadtown. The district, Swalwell and up the Derwent, was largely settled by German miners.

was in existence, a decade at least, before the close of the seventeenth century does not appear to be at all improbable. It probably was one of the principal, if not the only, establishment where the lead ore raised from the lead producing districts in the North of England was smelted and refined; and the arrangements and methods adopted would be very greatly superior to Bayle Hill smelting, though they might differ very little from those known and practised in very remote times. According to Pliny, the Romans reduced the ores of lead and refined it in furnaces. Their processes are, however, more clearly explained by Beckman.† "The ore was pounded very fine, or, as we say, stamped; it was then washed and roasted, and formed into a powder or paste. This was then put into the furnace, and by the first fusion gave a regulus consisting of silver and lead, which was called *stannum*, and was the same substance as that known by metallurgists by the name of *werk*. If it was required to separate the silver, it was again fused, not in the first furnace, but in a particular refining furnace with a hearth of lixiviated ashes. . . . The produce obtained by the second fusion,

† History of Inventions.—Tin, Tinning.

called in German treiben or abtreiben, was silver, and besides that half-vitrified lead called glätte [litharge or yellow protoxide of lead] which in part falls into the hearth. This substance, called by Pliny galena, a word which denotes molybdæna, was once more fused or revived, and then gave lead."

Had the Romans erected furnaces in Alston Moor, some remains of these or their products would, I think, have been discovered. The refining of lead could not be effected on the Bayle Hills, nor do I ever remember finding any litharge at these places; though pieces of lead are found mixed with the scoriæ.

The specific gravity of sulphide of lead is 7·5 to 7·8, and its composition when perfectly pure is—

Lead	86·55
Sulphur	13·45
	100·00

Galena very frequently contains other substances, and it almost invariably contains silver, often a considerable proportion, and also a trace of gold. The sulphide of silver is sometimes mechanically mixed with lead, and sometimes it forms an alloy

chemically combined. According to Mr. Hunt's valuable statistics, as quoted by Mr. Philips,* the average metallic yield of the lead ores raised in England between the years 1848 and 1857 inclusive, was 70·2 per cent. of lead. Pliny states that in the conversion of litharge, or what he calls galena—into metallic lead, there was a deduction or loss of weight of two-ninths.† 7·69 per cent. of this loss would be due to the expulsion of the oxygen contained in the litharge, and the remainder to the volatility of the metal, which must have amounted to 14·53 per cent., or about one-seventh of the lead contained in the litharge. Before the application of Mr. H. L. Pattinson's process, for the concentration of the silver, the extension of flues, and other processes for the condensation of the fumes, the loss of lead in the refining process often amounted to one-thirteenth of the lead operated upon.

The mines in ancient times belonged to the king, and at that period, the silver was of more importance to royalty than lead, however important the latter might be to the feudal lords and the church

* Journal of the Society of Arts, 1859.

† Pliny's His. Lib. xxxiv., ch. 47.

dignitaries, and this is probably the reason why they are called, in old documents, silver mines. It is evident that processes for separating the silver from the lead were in operation at that period, though it is probable that the silver was not extracted in the mining districts.

That silver was of more importance than lead is evident from the deep interest taken by Royalty to promote the welfare of the miners, and the anxiety manifested to have the mines properly and effectually worked. "In 1296, great profit is stated to have been derived from the argentiferous lead mines of Devon; and 360 miners were impressed out of Derbyshire and Wales to work them. In 1293, William de Wymundham accounted to the Treasury for 270 lbs. of silver. In 1360 a writ was issued, authorising certain persons to take up as many miners and workmen as should be necessary to work in the king's mines in Devon, allowing them reasonable wages, according to the custom of the country; to arrest and imprison such as should resist, till they gave security to serve the king in the said mines."

"Henry, Bishop of Winchester and Cardinal of

England, as one of the executors of John, Duke of Bedford, who had a grant of the king of the gold and silver mines of Devon and Cornwall, rendered 26 lbs. and 2 oz. weight of pure silver, raised in those counties from the 15th December, in the 21st [1348] to 16th August, in the year 23 of the same king's reign."*

Henry VI., having failed in all his attempts to procure the precious metal by alchymy, brought thirty-three miners from Bohemia to superintend and work the Royal mines. In an ordinance of the 26th of Edward I., 1298, concerning the king's mines in Devon, directions are given for smelting argentiferous galena. From this document it is probable that furnaces were used at that period for smelting lead ore and extracting the silver from the lead, and they were probably in use at this date in the North of England; though small quantities of lead ore might occasionally be smelted on the Bayle Hills.

The first attempt to smelt tin with pit coal was made by Sir Bevel Granville, of Stow, in Cornwall, in the time of Charles I., but without success. After

* Beeche's Cornwall, page 611.

the invention of the reverberatory furnaces, towards the end of the seventeenth century, it was found that the smelting of tin could be effected by pit coal; but the tin so smelted was, on account of its brittleness, eight per cent. less valuable than that smelted with charcoal. It probably contained sulphur derived from the coal.†

There is now no documentary evidence to connect the Governor & Company with the early attempts to smelt tin ore with pit coal in the reverberatory furnace; though I think it is probable that they were in some way connected with the inventors of this furnace. The Governor & Company's works, in 1692, were established at Bownham, near Bristol; and, at this period, persons from Bristol purchased copper ores in Cornwall at the rate of £2 10s. to £4 per ton.

† Pit coal was probably used to smelt lead and copper ores in Queen Mary's reign, by German miners who worked the Goldscope and other mines near Keswick. The superintendent of works was called Hecksteter—a very able man. The furnaces were large and well constructed, and were famous at that time in England. Small quantities of copper were obtained from Coniston and Caldbeck. The works were located near Keswick, as being the most convenient both for water and the coal, which they obtained from Bolton colliery. The silver in the lead and copper ore raised from the Goldscope vein, under the level, was more valuable than the lead and copper; in consequence, in 1559-60, Queen Elizabeth sued for it and recovered it from Earl Percy for a royal vein.—See "Natural History of Westmorland and Cumberland," by the Rev. Thomas Robinson, London, 1709.

At this date the Governor & Company obtained a charter for smelting lead with pit coal and sea coal. After the amalgamation of this Company with the Ryton Smelting Company, in 1704-5, the reverberatory furnaces were introduced by them into several of the mining districts of the North of England. I have not ascertained the exact period when the Governor & Company built the Whitfield mill. The site commands both the two Allendales and Alston Moor and the Coanwood coal mines, which they leased. It is certain that the lead was smelted at this mill in reverberatory furnaces; it is therefore probable that these furnaces were adopted in the mill built in Alston Moor, in the beginning of the last century, near Blagill, and, I believe, a small one in Crossgill. The Tynehead mill was built at a more recent date by another company, or by the Lord of the Manor. This mill is not shown on a plan of the Manor of Tynehead, made from a survey in 1788 for Lough Carleton, Esq. It is, however, shown on a plan of the Manor, made by Mr. Joe Millican, which is not dated. It would appear that it was built to smelt the lead ore raised from that portion of Crossfell vein which traverses the Tynehead Manor, called Shields'

Crossfell. Crossfell smelt mill was probably built about the same time to smelt the lead ore raised from Little's Crossfell mine, in the Manor of Kirkland and Skirwith.

It is probable that the process for refining the lead was introduced into the mining dales by the Governor and Co., with their furnaces for smelting with pit coal. We give* an outline engraving of the Corporation Arms of this Company. I suppose the motto '*spectatur in igne*' refers to the brightness of the silver when all the lead is oxidized, and blown from the test. In Mr. Forster's section of the strata, &c., it is stated that "the refining of lead was introduced into this country in the time of William and Mary, but how far it was similar to the present mode of proceeding, I do not know, though most probably it was partly the same; however, the speed of performing the work has nearly doubled within the last fifty years."† If we understand 'this country' to denote the mining dales of the north, the statement is probably correct, and the

* Page 114.

† This is probably stated on the authority of Mr. Mulcaster of the Langley Mills. Date 1821.

period assigned increases the probability of its introduction by the Governor and Co.

Though, undoubtedly, many improvements have been made during recent times on the processes of the ancient, and on those of the middle ages, in the metallurgy of lead: yet, it is evident, that no important principle had been discovered before the application of Mr. H. L. Pattinson's process for the concentration of silver—a process based upon an important law of crystallization, first noticed by him in 1829. His name must ever remain an honoured one, and, especially so, in Alston Moor, in connection with the application of science to art. According to the Encyclopœdia Britannica (date 1858) from more than 30,000 tons of lead the silver is extracted, which would otherwise have been lost to the arts, thus (at the rate of 5 to 8 ounces to the ton) not less than 200,000 ounces of silver are annually obtained. The result of this application has, therefore, been the actual saving of from £60,000 to £70,000 per annum to the country.* The cost of refining lead

* The few opportunities I had of intercourse with Mr. Pattinson, have left the impression that he was a truth-loving man, who had formed his opinions on many subjects, with independence of thought, unbiassed by authorities. The following tribute to his memory was made by the chairman at the

previously to the application of this process was from thirty shillings to sixty shillings per ton. During recent years, large quantities of foreign lead have been operated upon by this process.

It is not an object in this small work to give details illustrated by drawings of the working of

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meeting of the Society of Arts, held on the 27th April, 1859. "He thought it would not be out of place to refer to one individual, to whom we were especially indebted for much progress in this department of metallurgy. Mr. Phillips had referred to the process invented by Mr. Hugh Lee Pattinson for extracting the silver from lead ores. Within the last year, that gentleman had been taken from them;* and he thought this was a legitimate opportunity for acknowledging the debt of gratitude that we owed to him. He was in every respect a remarkable man. When a poor boy, in a small druggist's shop, in the little town of Alston, he taught himself chemistry, never having had an instructor. He was in every sense of the word a self-taught man; and he was a most industrious one, a most earnest worker, and a man of the closest and of the keenest powers of observation. He was led, amongst other things, by seeing the process of lead smelting that was going on in his own immediate vicinity, to direct his attention to the means of separating the silver from the lead, and after making a series of experiments, he succeeded in producing a process which, for a long period of years, saved not less than 200,000 ounces of silver annually, which had previously been thrown away. Not only had this self-educated man effected this, but he had introduced another useful product from lead ores, the oxy-chloride of lead, and had also given us a process for the preparation of the carbonate of magnesia from dolomite, or the magnesium limestone of the North of England. There was, however, nothing more remarkable in the career of this distinguished man than the way in which he bestowed the fortune which his industry secured him, in promoting the best interest of those around him. In the neighbourhood of the works now carried on by his family, he established schools, in which hundreds of workmen and children were educated."

* Mr. Pattinson was born 25th December, 1796, and died at his residence, Scots House, near Boldon, on 11th of November, 1858, aged 62 years.

Mr. Pattinson's, or any other smelting process. Mr. Pattinson's process for the concentration of the silver is, however, a very simple one. Another process for applying Mr. Pattinson's Law of Crystallization has been invented by a Frenchman, or Italian, of the name of Rozan.

Another principle adopted for separating silver from the lead is called the "*Zinc process*." It has been adopted by one or two firms on the Tyne. It is the opinion of some metallurgists that Mr. Pattinson's process is more effective.* The drawback in connexion with this process is the difficulty of separating the silver from the alloy of silver, lead, and zinc. This alloy contains about eighty per cent. of lead, and has to be submitted to distillation to remove the zinc it contains, which is said to be a very troublesome metallurgical operation. By this process less silver is said to be obtained than from Mr. Pattinson's process.

The separation of silver from lead by electrolysis—or electro-chemical decomposition—has been adopted

* At Stolberg, where both Pattinson's and the Zinc process were carried on, Mr. Swan was told that the latter was the best when treating impure ores; but in the case of pure ores, such as Alston ores, Pattinson's was best.

in a process patented recently by Professor Keith, of New York. It would appear that there are difficulties connected with this process, which, until they are removed, may prevent it from being profitably worked.

We cannot set limits to the discoveries in science and its application to the arts. It is, therefore, probable that Mr. Pattinson's process may be superseded by better ones. We must, however, accord to him the honour of having made the first step—a most important one—from the old methods which had been practised from the remotest times.

The quantities of the sulphide of zinc thrown away as refuse in the Nenthead mines and from the washing floors, even up to a comparatively recent period, have been enormous. The first attempt to economize the calamine or carbonate of zinc was made by Richard Grey, in 1794. He obtained a grant of the calamine found in Nenthead fields and Haggs North vein mines. He was engaged with washing the old refuse heaps of the former of these mines to about 1831. In 1817, considerable quantities of black jack or sulphide of zinc were raised by Thomas Shaw and Company, obtained chiefly from

the Guddamgill and Brownly Hill mines. It was smelted at the Langley mills. At that date zinc was selling at £70 per ton ; but the price suddenly fell to £40 per ton, and the concern, in consequence, became a losing speculation.* Considerable improvements must have been made in zinc smelting processes, as the price of zinc is, at the present time, much below £40 per ton. Mr. Attwood erected the Spelter mill, near Milton station, on the Newcastle and Carlisle Railway ; and since that period, 1845, considerable quantities of zinc ore have been smelted there. The ore has been chiefly obtained from the Nenthead, Brownly Hill, and Isle of Man mines. The following are the quantities raised from the Nenthead mines by the Tynedale Lead and Zinc Company.

1883 — 1916 tons of zinc ore.
1884 — 2652 ,, ,,
1885 — 3066 ,, ,,
1886 — 3033 ,, ,,
1887 — 3400 ,, ,,
1888 — 3800 ,, ,,

* Sopwith's Mining Districts, page 125.

ON THE WAGES PAID TO MINERS AND LABOURERS.

NOTHING has been discovered to throw any light on the amount of wages paid to labourers and the miners of Alston Moor in ancient times. The opinion is entertained, by several authorities, that wages were higher at the time of the Conquest, and for a long time afterwards, than they are at the present time. During this period the price of an ox was four shillings, a labouring horse the same, of a sow one shilling, of a sheep with fine wool, tenpence, with coarse wool, sixpence. 120 acres of land was worth twenty shillings. During the same period, the price of wheat ranged from two shillings to six shillings per quarter of 512 pounds, (probably Saxon pounds.)* The coins would contain about three times the amount of silver that they do at the present time. In later times, about the year 1300, sixpence an acre was the average rent for arable,

* Wade's History.

and a shilling or eighteen pence for meadow land. During the reigns of Edward III. and Henry IV. English peasants were better paid than at present. A labourer earned one shilling and sixpence a week, with which he could buy a bushel of wheat and twenty-four pounds of meat. In 1350 wages of reapers were fixed at three-pence a day, equal to five shillings, in purchasing power, of our money; in 1444, at five-pence, common labourers at three-pence-halfpenny, equal to six shillings and eightpence and four shillings and eight-pence at present.† A lower value of money for this period is given in Wade's history.‡

During the fifteenth century wages advanced considerably, but the value of the coins fell nearly one-third. During the latter part of Henry VIII's reign, and during Edward VI's reign, the coins were much debased. The shilling did not contain one-half the weight of silver it does at the present time. The tampering with the coins was the cause of much

† The Oxford Chronological Tables, page 57.

‡ At the wedding of Gervase Clifton and Mary Neville in 1530, the following prices occur:—12 swans, each 6/-; 8 cranes, each 3/4; 16 heron-sews, each 1/-; 10 butters or bitterns, each 1/2. At the same dinner, an ox was 30/-; a calf, 3/-; a lamb, 1/6; a wether, 2/4; and chickens, 1/6 per dozen.—*Leeds Mercury*, Nov. 13th, 1886.

suffering. It is probable that the working population was never in such a miserable condition in any period of our history as it was in the time of that haughty, cruel, and selfish despot, Henry VIII. The wages were fixed by the Justices, and the scale of wages they fixed was only sufficient for a bare subsistence, and little more time was placed at the labourer's disposal than was necessary for sleep. In Edward VI.'s reign, an Act was passed to reduce a man to two year's serfdom, who refused to work at statute prices, and to brand him as a vagabond. Not only did the Justices control the amount of wages and keep them down to the lowest point, but they forbade the workman from going out of one parish into another to better his condition, and this law was not repealed until the time of George IV. As it has been pointed out, the system of society at this period was nothing but a conspiracy of the rich against the poor. To the enactors and administrators of these cruel laws, the dream of Sir Thomas More, written in 1516, must have been regarded as impracticable, vain, and foolish, though most of it has been realized.

"The chief, and almost the only business of the

Syphogrants [Magistrates] is to take care that no man may live idle, but that every one may follow his trade diligently; yet they do not wear themselves out with perpetual toil, from morning to night, as if they were beasts of burden, which, as it is indeed a heavy slavery, so it is the common course of life of all tradesmen everywhere, except among the Utopians; but they, dividing the day and night into twenty-four hours, appoint six of these for work, three of them are before dinner; and after that they dine, and interrupt their labour for two hours; and then they go to work again for other three hours; and after that they sup, and at eight o'clock, counting from noon, they go to bed, and sleep eight hours."* This arrangement would leave eight hours at their own disposal.

In 1600 the shilling was coined one-tenth more valuable than it is at present. "From a speech of Sir Walter Rawleigh, in Parliament in 1601, when Lord Warden of the Stannaries, it appears that the pay of a working tinner, in Cornwall, was four shillings per week, finding himself with food. Of this Sir Walter boasts as a great change for the better, inasmuch as previous to the patent granted by Queen

* Utopia, translated by Bishop Burnet.

Elizabeth of the pre-emption of Cornish tin, which was then claimed on the part of the Duchy, the tinner only received two shillings per week."* It is probable that the labourers and miners, at this period, in Alston Moor and the North of England received equally low wages as the Cornish miners. In the Midland counties, about 1610, labourers in husbandry were paid sixpence to tenpence per day, without meat, and women haymakers fourpence a day, without meat. These rates indicate a great falling off in the value of labour, for at that period the price of wheat was £1 14s. 1d. per quarter, and a great reduction had taken place in the value of coins. The average price of wheat for the twenty years ending 1745 was £1 9s. 10d., and the price of beef and mutton 3½d. per pound. According to information obtained from Mrs. Millican, of Tynehead, the price of beef and mutton about 1760-70 was about 3½d. per pound. Butter was 4d. per pound, and payments were made for these articles only once a year, at Christmas. Notwithstanding these low prices the farmers sustained many losses; which is probable, for in some old account books of 1745,

* Beche's Cornwall.

which I have seen, labourers' wages were only eightpence to tenpence per day. Mr. Thomas Pearson informed me that when he was a young man a good fat wether could be bought for 10/-, a ewe for 6/-, and gimmer lambs in the autumn for 2/6 each. The land in Alston Moor was cultivated chiefly by the proprietors; when it was let the rents were low. Lowhouses Farm, in Garrigill, was let for £15 per annum. This farm possessed an unlimited right of pasturage on the Commons on each side of the Tyne, before they were divided.

In ancient times the grain food was chiefly brought from the 'West Country,'—that is from the vale of the Eden. When a boy, I occasionally saw the Badgers come into Garrigill village, driving a long string of ponies—or 'carrier galloways'—(as they were then called) headed with a belled leader. After the turnpike roads were made the ponies soon disappeared. It would appear from a charter confirming privileges of the miners granted by Henry III. (1235) that the agriculturists had sold grain food to the Alston Moor miners during a long period of time. "Faciet etiam venire ad predictam mineram mercatores de balliva sua cum victualibus ad susten-

tationem dictorum minitorum sicut illuc venire consueverant temporibus predictis."

In ancient and up to recent times most of the clothing for both sexes was carded and spun by the females. A mixture of the wool of black and white sheep was frequently converted into grey clothing for the males, and pure white wool for blankets and quilts; both of which were spun on the large spinning wheel. I believe both the linen and wool were spun on the small spinning wheel for the linsey-woolsey fabrics, which was used for female garments, bed curtains, and, occasionally, counterpanes. A great deal of buckskin leather was made into tight-fitting breeches for the males. Buckskin leather was in use (though made from sheepskins) up to the beginning of the present century. Many years ago I heard some of the old men who had worn leather clothing complain of it as being very uncomfortable in wet weather and in the winter season. All the linen required in a family was spun by the females. In 1315, there was a fulling mill and a water corn mill at Alston; both of these mills would be important ones for the population.

One result of the settlement of the estates on the

Greenwich Hospital was a greater security for capital expended in mining; in consequence, the mines were gradually opened out, and, towards the end of the last century, the result was a state of prosperity unknown in previous times, and which occasioned a considerable increase of population.

In the Inquisition held in Penrith in 1356 it is stated that the miners dwelt together in *Shelis*. According to Hodgson, shiels were hovels or cabins made with sods-sides and covered with poles and turf, or moor rushes, and in some cases, probably, with 'ling heather thatch.' They were formerly much in use in those pastures or moors which were called summerings. In Westmorland, poor dwellings of this kind were called *scales*, a word both in derivation and meaning exactly the same as *shiels*. If the miners resided constantly in these hovels they would possess few of the comforts of life.

At this Inquisition the farmhouses are not mentioned. Though called shieldings in the inquest of 1315, yet, in order to protect their cattle from the northern marauders, it is probable that long before this date, houses with strong walls had been substituted for the old shieldings of the first settlers. 1356

is the year that Edward III. invaded Scotland and was obliged to retreat, and previously, for a long period, there had been few years of peaceful relations between England and Scotland. In consequence, the borders would be in a very unsettled state. Some portions of the strong walls, erected at a very early period, may still exist in some of the old farmhouses, the walls of which are three feet or more in thickness. In some of these old houses the inhabitants and cattle were lodged under one roof, and, in some cases, entered the building by one door. The windows of these old houses are so small as to render it difficult to effect an entrance from the outside. I am inclined to suppose that some of the old houses were built like the old peels of that period, the cattle occupied the lower part and the inhabitants the upper part of the building. I have been informed that the rooms in the old farmhouses in the Tynehead or Hill Liberty were so low that a person of ordinary size could not stand upright in them. Most of these old farmhouses were rebuilt, or partially rebuilt, after Mr. Lough Carleton obtained possession of the property.

ON THE ORIGIN AND DEPOSIT OF METALLIC ORES IN THE MOUNTAIN LIMESTONE DISTRICTS OF THE NORTH OF ENGLAND.

In the preceding pages we have attempted to give a brief history of the modes and results of mining in Alston Moor; and also noticed the processes of smelting lead in ancient times. We shall now endeavour to point out in as concise language as possible the amount of knowledge we have obtained, by these mining works, of the conditions connected with the deposit of lead in the Carboniferous rocks in Alston Moor, and the adjacent dales.

The veins in which lead, zinc, &c., are deposited were formed soon after the deposition of the Coal Measures. It is clear from the facts connected with the intersection of veins in the Nenthead mines that the cross veins were in existence before the East and West veins.* The formation of the East and West veins is clearly connected in causation with the lines of the greatest effect of the elevatory forces.

* See Appendix III.

The deposits existing in the veins, at the present time, could only have been formed after a vast interval of geological time, during which an immense thickness of rocks was removed by denudation.

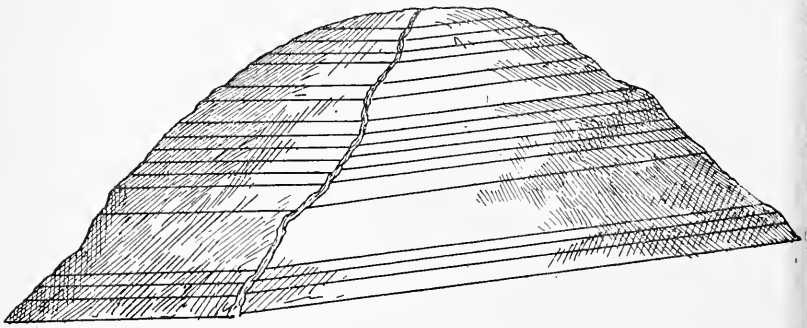
1—The Carboniferous rocks in which lead is found may be separated into two groups—those above the Great Limestone inclusive, and those below. In Alston Moor, the highly metalliferous portion is about 420 feet in thickness. This portion comprehends all the strata between the top of the Slate Sills and the bottom of the Great Limestone. The shale or plate beds between each stratum, however, rarely contain lead ore. The less metalliferous portion comprehends all the rocks below the Great Limestone. Tynebottom limestone, under conditions, excepted.

2—In both classes of rocks large portions of the veins contain little or no lead ore ; but this is more especially the case in the less metalliferous rocks.

3—The deposits of lead in the veins in both classes of rocks are invariably connected with conditions which are favourable to the descent of water from the surface, and its circulation in each stratum of hard rock in a longitudinal direction in the vein.

The deposits of lead in the less metalliferous rocks are, with a few exceptions, poor, and extend a shorter distance from the surface than in the more metalliferous rocks.

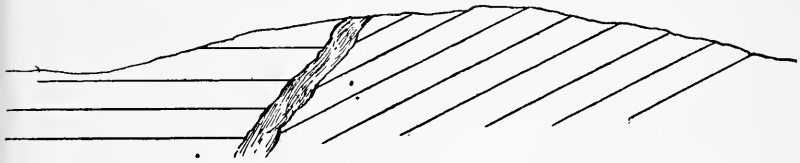
4—Water is prevented from descending into any particular stratum by a great thickness of superincumbent strata. Under the summit of mountains the veins contain little or no lead ore, not even in the highly metalliferous Great Limestone, where it is lying at a great depth below the surface. Should rich deposits be found in such a position it is due to conditions which rarely occur—to the formation of valleys running in opposite directions on each side of the mountain, in connection with a rise in the strata at right angles to the direction of the vein, to the opposite side of the mountain, the strata being broken up with intersecting fissures, thus—



which carry the water that sinks into the rocks on the one side of the mountain to the vein on the other side.

5—The descent of water is also affected by the steepness of the sides of the mountain. Where the sides are steep, water flows rapidly over the surface and less of it sinks into the rocks.

6—The descent of water to a great depth may be occasionally effected by the rise of the strata to the surface, as shown in the sketch below.

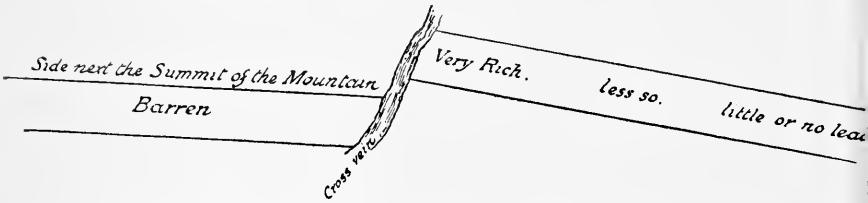


The water descending in beds of highly inclined strata, and ascending to the surface in the vein. In the North of England these conditions rarely exist. During a short visit, made many years ago, I was inclined to suppose they are connected with the rich deposits of lead ore, in the Stone Croft vein, near Haydon Bridge.

7—The descent of water is promoted by the dishing in of the side of the mountain, and the quantity of water which circulates in the vein is proportional

to the extent of the gathering ground in a higher situation than that traversed by the vein. After its descent into the rocks it flows to the vein in weak intersecting cracks or fissures, which frequently traverse the rich portions of veins in an oblique direction. In consequence of the conditions connected with the descent of water the richest deposits of lead ore are generally found at no great distance from the out-cropping of the containing rock. Veins which run in a direction nearly parallel with the valleys contain more extensive deposits of lead than those which cross the valleys at right angles. It is probable there may be other conditions connected with the descent of water which have not come under my observation.

8—The circulation of water in the veins is affected by the inclination of the strata in the direction of the vein, thus—



The richest deposits are found in that portion of strata which is most elevated on the side of a power-

ful cross vein. The circulation of water is dependent upon an outlet, generally at a lower level.

9—Under the beds of the principal rivers—not those streams which flow rapidly down the sides of the mountains—the water may sink but cannot circulate; consequently, in the most metalliferous rocks lead has only rarely been deposited, even at a moderate depth from the surface. Generally the veins contain no lead ore.

10—At great depths from the surface, not only lead but all other sparry vein minerals are entirely absent.

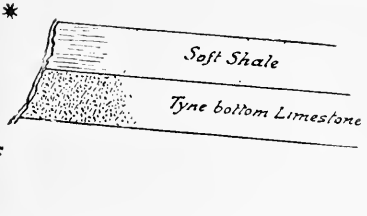
11—Near the surface the contents of veins are invariably in a state of decomposition, and especially so in a high situation on the mountains, unless the veins are filled with the almost insoluble sulphate of barytes. The carbonates of lead and zinc are formed from the decomposition of the sulphides and the combinations of their oxides with carbonic acid. More rarely the sulphate of barytes has been acted upon in a similar manner. The sulphur being carried away in the form of sulphurous acid.

12—The water that falls from the atmosphere contains a considerable amount of oxygen in solution.

As the water descends the oxygen disappears in the destructive oxidation of the rocks and contents of veins, &c. It would, therefore, appear that until the absorbtion of the free oxygen from the water is entirely effected, lead and the minerals accompanying it cannot be deposited. It is also probable that lead is never deposited very near the surface; though, from subsequent denudation—greatly effected during the glacial period—it is not unfrequently found in the clays and broken rocks near the surface. In some few places the form of the surface may have been much altered since the deposit of lead ore, &c.; but, for the most part, though the mountains have been denuded, their general outlines remain the same.

13—That water does not lose its solvent power by the deprivation of the free oxygen is evident from the enormous quantities of limestone which have, in many places, been dissolved, and the spaces formed refilled with crystalline substances. Its solvent power would be increased by large quantities of carbonic acid held in solution. It is probable the dissolution of the rock and refilling were effected at the same time; for, it is certain, that in many

instances, in the Westmorland mines, the vast spaces which have been filled with sulphate of barytes and lead ore could not possibly have remained open after the disappearance of the limestone from the spaces they occupy, but would have been filled with the soft overlying plate or shale.* The most productive portions of the metalliferous limestones are those which have been most susceptible to decomposition. A few inches often separate the productive from the comparatively non-productive portion of the same stratum of limestone. Many of the crystalline substances substituted are totally different in their elements from the limestone rock which once filled the space they occupy. They are carbonates of the peroxide of iron, carbonates of lime, fluorides of



* In the Dufton Fell mine, and near the intersection of an east and west vein with the low cross vein, large spaces on the one side of the East and West vein, once filled with limestone, but now occupied by barytes and lead ore, had contracted a little when the change was effected, and cracks were formed in the soft shale. These horizontal cracks were all filled with pure lead ore, about the thickness of a penny piece. I could not detect the least particle of barytes; though the spaces below, from which the limestone had disappeared, were entirely filled with sulphate of barytes with nodules of lead ore sparcely scattered in it.

lime, sulphides of iron, lead, zinc, &c., and, in the Westmorland mines, sulphate of barytes and sulphide of lead, with scarcely any other mineral except in Scordale carbonate of lime. When these minerals were formed the oxides did not exist, even the carbonate of the peroxide of iron so easily converted into an oxide retains its pearly lustre. When this mineral is found partially changed into an oxide, a destructive agent has commenced its work. But by what enchantments have these wonderful changes been effected, in the deep caverns of the earth, so strangely different from those that take place at the surface? Metamorphoses as marvellous as the poetical creations of Ovid.

14—The sublimation of the metals and other foreign substances from beneath into the veins of Alston Moor and Westmorland is—to use the words of Professor Whitney, made in reference to the lead deposits of the Upper Mississippi—"an impossibility absolute and entire." Taking into consideration all the facts connected with metallic deposits found in the veins, it is evident that the only sources from which their elements can be derived are the limestones and sandstones forming the enclosing rocks,

the laws of chemical combination or change being unknown. It is probable that sulphuretted hydrogen, often present in the mines, is one of the chief agents. This opinion is sanctioned by Professor Whitney. It is evident that carbonic and fluoric acids must play an important part in the formation of minerals, the latter particularly so in the early stages of the process; for frequently casts of the crystals of fluor spar exist in veins where not the least trace of this mineral can be found. Limestone which has not been removed is frequently changed into a very hard substance, probably by the absorbtion of carbonic acid, and the loss, in some places, of nearly all its calcium.

15—It is probable that deposits of lead and other minerals are being formed and destroyed in different parts of a vein at the same time. The metallic deposits must have shared the fate of the containing rocks which once filled up the valleys. These processes of composition and destruction have been in operation throughout periods of past time, of the duration of which we can form little conception.

A great change, however, must be made in chemical theory and practice before the changes which

result in the formation of metals such as copper, lead, &c., from other substances, which at the present time constitute elementary bodies, is demonstrated and effected in the laboratory. The highest speculations of the ablest chemists, however, point to the possibility of further analysis of these substances. It is as certain as any conclusion can be, which is based upon observation solely, that in the unmined veins, traversing the carboniferous limestones and sandstones, the transformation of one simple substance into another is now being effected by natural processes wherever the conditions are favourable.

In connection with the last paragraph, the following extract from a paper sent to the Government office, in 1875, may prove interesting:—

"With regard to the vast deposits of barytes mixed with lead in the Dufton fell mines,* my own belief is that, by some process of Nature's chemistry, not yet understood, the calcium has been transformed into barium and lead. Faraday believed in the unity of matter as well as in the unity of force; and Dumas

* On the side of Silver Band vein, about 100 fathoms in length and 60 feet in width of barytes, occupied space once filled with the Great Limestone. Yet the soft shale above this space remained *in situ*, and was not disturbed when the changes below it were effected.

has expressed an opinion that chemical analysis has not yet reached the ultimate particles of matter. Without pretending to an acquaintance with the known laws of combinations of different kinds of matter and the changes to which those combinations are subjected, so profoundly studied by these highly gifted men, I may be permitted to confess that the same views have been forced upon me by a close inspection, during many years, of the phenomena connected with mineral veins. In several places which have come under my observation, the process of deposition has evidently been going on until stopped by the mining operations. The phenomena which indicate the process of deposition only clearly exist at the bottom of, or at the extreme end of rich lead deposits, the furthest removed from the surface. No intelligent mind could observe the phenomena at the south termination of the rich lead deposits in Cowhill cross vein, Nenthead, when first opened into, without feeling, with a sense of awe, that he had entered one of Nature's secret workshops, where indeed he found the work, so far as it had advanced, perfect, though still incomplete. But the Genii—if we may so personify law and order—effecting these

wonderful transformations, scared by the intrusion, had vanished with their tools."†

† See Appendix, No. IV.

ON THE FUTURE PROSPECTS OF MINING IN ALSTON MOOR.

Most of the veins in Alston Moor were known to be in existence in the time of the Earl of Derwentwater. In the Great Limestone the deposits of lead ore were almost entirely untouched, and those in the upper strata only partially exhausted when the estate came into the possession of the Greenwich Hospital. The discovery by Sir W. C. Blackett, of rich deposits in the Great Limestone, evidently raised great expectations of finding rich mines in this stratum; for in the general letting in 1736, offers were made to work some of the veins and pay $\frac{1}{4}$ duty. Those expectations have been amply realized. By far the greatest portion of lead produced since that period has been raised from veins and flats in this stratum of limestone.

Mr. J. Grey, in his evidence before the Commissioners appointed to enquire into the affairs of the Greenwich Hospital, on the 7th December, 1859,

admits that the mineral property of Alston Moor had been thoroughly explored. He seems, however, to have held the opinion in common with Mr. J. Taylor, that lead deposits of value might be discovered in the lower strata, or as he expresses it, in a downward direction. Liberal deductions of duty were offered to the lessees who would sign conditions connected with the employment of a number of men to explore the lower strata. It appears that he could only prevail on some of the principal lessees to do so. Mr. Grey attributed the reluctance of the lessees to sign the conditions to prejudice, and considered their views fallacious. The lower strata, in the richest portion of the Alston mining district, are lying in a low and consequently unfavourable position for the deposit of lead ore in the veins; that this is the case is clearly shown on my published map. Where the Great Limestone is thrown down to a considerable extent on the east side of the Nenthead cross veins, none of the veins contained lead ore of any value until it rises into a higher position.

A few years after my removal from Alston Moor, I met Mr. Grey at Gilsland. He was evidently well acquainted with my views respecting the general

unproductiveness of the veins in the lower beds. He informed me that Rodderup fell vein had been proved to contain much lead ore in the Whin; and he good-humouredly bantered me on the erroneousness of my opinions. I possess no exact information respecting mining in this vein in the Whin, further than that it has not repaid costs and that the works are now abandoned. That lead ore may occasionally pipe down, to some considerable extent, under especial conditions, may reasonably be expected. I remember once calling upon Mr. Nevin, agent of the Coal Cleugh mines. He had just returned from viewing the vein in the Engine shaft or sump, which had been sunk through the Whin in the Pasture Grove vein, Weardale. He informed me that the vein in the Engine shaft or sump contained much lead ore, and that he and Mr. Walton had concluded, from calculations carefully made, that not less than three millions of bings of lead ore would be raised from this vein in the Whin. From enquiries made a few years afterwards, I was told that the deposit of lead only extended a few feet on each side of the sump. The rich ground in Rodderup fell vein may be similarly limited in extent.

The portion of Tynedale above Gilderdale and

Ayle Burns comprehended in the heavens-water division, may be roughly estimated at 60 square miles. From about three-fifths of this country the upper or productive beds have been removed by denudation. The total quantity of lead ore produced from the numerous veins traversing this denuded portion has been very small, when compared with the quantity produced from the other two-fifths of the district in the upper strata. Only three or four mines have been profitable to the lessees, namely, Cashwell, Ashgill field, Tyne bottom and Rodderup fell.

In a tabulated list of the produce of lead ore raised from the numerous veins, in the lower beds, in Col. Byng's Tynehead Manor during the period from 1811 to 1855 inclusive, I find the greatest quantity raised from one mine in one year is 456 bings, and in only three other mines have 400 bings been exceeded. During many years the quantities raised annually from most of the mines are denoted by units. Cross-fell vein is the only one in this manor which traverses the upper strata, and it produced 8650 bings in the years 1811 to 1815 inclusive. This instance strikingly illustrates the non-productive character of the lower beds; indeed the results of mining in this manor,

where the lower strata are placed in a position not at all different from the position of the upper strata in the Alston Manor, in which the veins have contained rich deposits of lead ore, prove how slight the probabilities are of discovering rich deposits in the lower beds directly below the rich deposits in the upper strata. The Crossfell vein has been proved non-productive below the rich deposits that were worked in the upper strata. It has been stated to me, by a competent authority, that excepting Crossfell mine, the loss of capital in working and exploring the veins in the Tynehead manor has been considerable.

From the veins in the lower strata which basset on each side of the Tyne river below the Priorsdale portion of Alston Moor, with the few exceptions already mentioned, no profits have ever been realized. Below the small but rich deposit in Ashgill field flats in the Scar Limestone no lead ore of any value was found in the Tynebottom limestone; and in the Tynebottom mines the veins in the Whin, only a few feet below the richest ore deposits in the limestone, were proved in several places to be entirely barren.

It is only under especial conditions that rarely occur that veins in the lower beds are productive of lead in the Alston district. Why chemically formed limestones should vary so much in their ore-producing qualities is a problem for chemistry to solve.

From the above facts it is evident that the reluctance of lessees to spend money for the trial of the veins in a 'downward direction' into the lower beds, is not due to any prejudice or fallacious conclusions, but is based on a wide experience obtained at various periods and by the loss of much capital. In the case of Nentforce level, the loss sustained by the Lords of the Manor would have proved a serious one to a private company. It may safely be predicted that the results of mining in future will not be different, and that no extensively productive mines in the lower strata remain to be discovered. My examinations of the Alston Moor district, repeatedly made at intervals during a number of years, always resulted in an opinion unfavourable to the existence of undiscovered lead deposits even in the upper strata. These investigations were based upon all the information I could obtain, regardless of the great amount of labour often involved.

At the present time [1886] the low price of lead entirely prevents any hope of raising lead ore from old worked mines profitably. From a statement in "Chamber's Journal," for January, 1886, it appears that the amount of Spanish lead imported into this country during three recent years was 99,000, 124,000 and 186,000 tons respectively. The Spanish mines are not deep, and the best workmen are paid low wages. In connection with low wages the necessaries of life must be purchased at equally low prices. It is impossible to obtain lead from the greatly exhausted mines in Alston Moor to compete in price with the Spanish lead raised from rich mines at much less cost of labour. In America, considerable quantities of lead ore are raised in connection with silver, which but for the silver, would not be mined at present prices.*

Before the price of lead fell, on account of the poverty and exhaustion of the mines in the upper strata, there was not sufficient employment for the miners; in consequence, the census of 1861 shows a decrease of 411 inhabitants. A number of labourers were brought into the country to construct the rail-

* See Appendix No. V.

way from Haltwhistle to Alston, and but for this circumstance the increase shown in 1851 would have been much less. To the low price of lead is due the rapid decrease shown on the subsequent censuses; but had lead maintained an average price, a decrease would have taken place more slowly, but not less certainly. It is, therefore, not probable that the prosperity of the country will be much promoted by an increased value of lead. It may be, however, that in some future period other minerals, which exist in the district, may possess an economic value sufficiently high to leave a profit, after defraying the cost of production. There is iron-stone in the district of excellent quality, which railway accommodation might render available; and at present the deposits of zinc ore in Nenthead are being worked to much advantage. In some distant period, when the price of coal is considerably enhanced by the partial exhaustion of our coal fields, the water power in the district may be utilized for manufacturing purposes to an extent sufficient to give employment to a population as great as has ever been employed in the mines. In the meantime, it is evident that, as the mines are closed, the profits from grazing the land

will become more important in the district—if they are not already more important—than those from the production of lead.

From the extent of the mining works made since 1736, it is evident that by far the greatest portion of the lead ore originally contained in the veins has been extracted since the settlement of the manor on the Greenwich Hospital. Much knowledge of the conditions connected with the formation of veins and the deposit of metals in them has undoubtedly been gained by experience in Alston Moor, and in mining fields in other districts during the last 150 years. It would have been remarkable if, as has been affirmed, our great grandfathers knew almost as much about mining as we know, and especially so when we take into consideration the almost boundless advance that has been made in scientific knowledge during this period. Such, however, is not the case. Taking the lowest ground of empirical knowledge we are able to pronounce negations upon many proposed trials which would have been made one hundred years ago, if money could have been obtained for the construction of the works. Sir G. C. Lewis has pointed out that a simple negation is often as valuable as a

positive conclusion. This is especially the case in mining, for it is evident that the more negations we can safely affirm, the nearer we approximate to positive results. Mr. Smeaton and Mr. Gilbert were both very able men, yet the Nentforce level planned by the former has proved a total failure.* Probably not less than £110,000 have been wasted upon it by the commissioners of Greenwich Hospital and private speculators. Had Gilbert's Canals been made they would have led to no discoveries of lead in low-lying strata. In more recent times, Blackett level—the great work planned by Mr. Sopwith—when completed is certain to prove as much a failure in the lower strata at a great depth from the surface, as Nentforce level.† The fact is lead cannot be deposited, even in highly metalliferous rocks, at a great depth below the surface in the localities where these works are made or were proposed to be made. The contents of veins are chiefly chemical products formed accord-

* This level was commenced in July, 1776.

† It is scarcely necessary to point out that this opinion does not apply to the discovery of veins in this level which may prove productive on each side of the valley in the upper strata; but only to the impossibility of lead existing in the lower strata at some considerable depth below the bed of the river. In the former case my knowledge of the district is much too imperfect to enable me to form an opinion of any value.

ing to Dalton's theory of definite proportions; and the conditions which promote chemical change and crystallization hardly exist above these deep levels except very near the surface.

SCENERY.

The village of Garrigill is pleasantly situated on the banks of the Tyne. The site of the village is upon an old bed of the river, about ten or twelve feet higher than the channel it flows in at the present time. Its ancient channel was, however, as deep as the one in which it now flows, for all the hard slaty shale above the Tynebottom Limestone has been removed, and the space filled with river gravel. It is not easy to point out clearly the cause of this curious change of the river's bed, which has been supposed to be due to an artificial cutting made in the hard shale. The impediment which forced the river from its direct channel, turned it back a little, and compelled it to take another course to the east, was probably an ice glacier which crept down from Blackband. A fissure or crevass was probably formed in the ice on the line of the present bed of the river, into which

the dammed up water from the melting ice entered and cut the passage through the very hard shale. This part of the river above the bridge is called 'The Straits.' The view of a portion of it from the bridge is picturesque.

Garrigill was only a very small village at the commencement of the present century. A considerable number of houses have been built during the period of my recollection. Where the Bridge end houses now stand there was only a blacksmith's shop. One of my earliest recollections is connected with this shop. My father was leading me into the village, and just as we passed the door of the shop two smiths pulled a large piece of glowing iron out of the fire and commenced hammering it with great energy, the sparks flying in all directions. The impression made has remained vividly distinct on the memory. The bridge over the Tyne was a very narrow one. It was widened, I believe, about the year 1824. The occasion was the great difficulty in getting waggons across it, that were loaded with machinery for the Teesside mines. There are three or four farm houses and two inns in the village, the rest of the buildings are cottages. Ivy House is the best and

most commodious farm house. It was built, I suppose, by Mr. Foster, in the latter part of the last or the beginning of the present century. Mr. Foster was one of Mr. Beaumont's principal mine agents at Allenheads. I have been informed that the Fosters are very old residents in Garrigill, and that they were related to the Earl of Derwentwater.

Nenthead, as we have already pointed out, has sprung up in connection with the Lead Company's mines. The old District House, in which the principal agent resided, and where the principal business was transacted, was built, as I have been informed, at the beginning of the eighth decade of the last century; the present one in 1826 or 7.

Mr. Hodgson must have drawn a little upon his imagination when he described the valley of the Nent as being, before the age of lead, a fairy land, with flowery meadows, wild shaws, and bosky braes with Nentsbury for its capital. Excepting during the short season of summer, in early times the upper part of the Nent must have had a wild and desolate appearance. Mr. Pearson's description of it is more appropriate: "Scrag of the world unfinished and

NENTHEAD

deformed." Deformed it certainly is by the refuse brought out of the lead mines.*

Loveladyshield, the residence of J. Dickinson, Esq., certainly occupies the pleasantest situation in the vale of the Nent. It is sheltered by the mountains on the north-east side. The house and its surroundings have been greatly improved by the present owner.

Like most of the old towns Alston at one time probably consisted of not more than two or three dwelling houses. What was the train of circumstances which occasioned the agglomeration of houses sufficiently numerous to form a market town, is a puzzling question, only admitting a 'wide solution.'

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* Mr. Pearson was a clerk in the Lead Company's office. He wrote a volume entitled, "Poems by Eden Side," which was dedicated to Southey. The following lines form a portion of the poem from which the above is extracted :—

"Yet, ah! as I depart;
The starting tears betray my anguished heart;
For there are some that on these mountains dwell,
Whose breasts with friendship's purest feeling swell,
And though the clime I justly may condemn,
O! my heart bleeds to bid farewell to them."

A few years ago lodgings were obtained for me at Twickenham, where I stayed a few days. One evening the lady showed me a copy of Mr. Pearson's "Farewell to Nenthead." I was much surprised until the lady informed me that she was Mr. Pearson's niece. She was also surprised to learn that I had been employed at Nenthead and by the same company. The poem she showed me was beautifully printed on satin cloth.

The site does not appear to be a favourable one for the '*mercatores*,'* whatever might be the kind of goods they brought into the district. In early times, they would be compelled to ford either the Tyne or the Nent, which we must conclude were not always bridged. Certainly it would be scarcely possible to select a site for a town more inconvenient for the principal road to pass through into the upper part of Alston Moor; and, as if to make matters still worse, the steepest part of the street is the narrowest. Had the road been diverted, in the middle of the last century, in some direction where easy gradients could have been obtained, a great boon would have been conferred on the inhabitants of the valleys of the Tyne above Alston and of the Nent, and also on the lessees of mines.

Though the country has produced much wealth, very little of it has been expended in building mansions, or expensively constructed houses in the district. The Loaning house was built by Mr. Hutchinson, the lessee of the Brownly Hill mines. It

* Perhaps '*caupones*' would have been a better word for the old charter writer. It is probable that the goods brought into the district, by the producers or by chapmen and hucksters, were only sufficient to satisfy the immediate wants of the inhabitants.

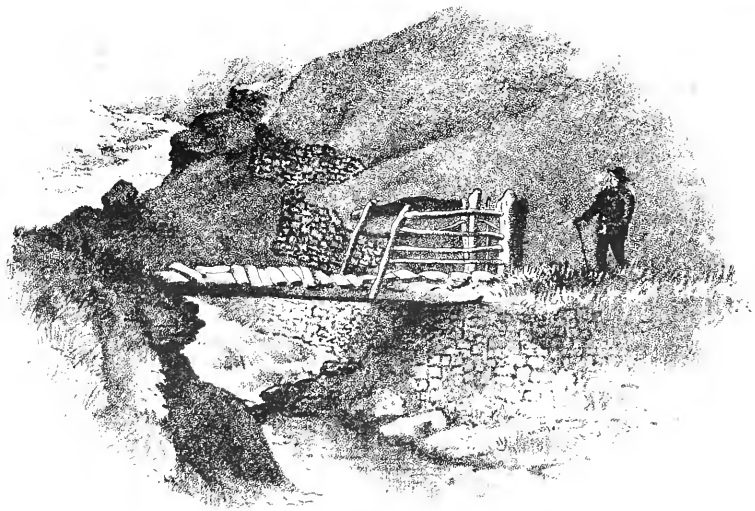
is marked upon an old plan, from which it may be inferred, that it was built near the end of the seventh decade of the last century. It may, however, have been drawn upon the plan at a later date. Alston House was, I believe, built towards the close of the last century. Harbut Law Hall was built by Mr. Robert Friend in 1844.

There are no old castles, with grand historic associations — no ruined monasteries, priories or nunneries — no lakes or broad sheets of water, no avenues of tall ancestral trees in the district; in consequence the attempts to portray the scenery of Alston Moor when not depreciatory have been chiefly based on atmospheric effects. There is something unreal in these descriptions as if the writers had drawn more upon the imagination than on observation; for fine effects of light, shade and colour are rarely observed in these narrow valleys. But though the views are not either very beautiful or grand, and though there is a great want of trees to adorn the landscape and form interesting sky-lines in the lowlands, yet there are many picturesque places on the banks of the streams, where dwarf indigenous trees and bushes still flourish. The water of the

burns rushes rapidly down the sides of the mountains over stoney beds and often between steep rocks, through which, during long periods of time, it has cut narrow passages, in which the rocks, on each side, are covered with beautiful mosses and lichens, and their ledges covered with heather and hardy ferns. The upper ledges are often covered with the light green foliage of the bilberry plants, which are spotted with their black fruit in the autumn, and the adornment is complete by the dwarf over-hanging bushes. These scenes of picturesque beauty sink deep into the memory, and if they formed a portion of a gentleman's garden would be considered its greatest ornament.*

The first bridge across the Tyne is situated a short distance below the junction of Clargill burn with the river. The scenery above and below this bridge is

* Scenery of the above secluded character has been described by Sir Walter Scott. "It frequently happens that the most beautiful points of Scottish scenery lie hidden in some sequestered dell, and that you may travel through the country in every direction without being aware of your vicinity to what is well worth seeing, unless intention or accident carry you to the very spot. . . But here and there the progress of rills or small rivers, has formed dells, glens, or as they are provincially termed *dens*, on whose high and rocky banks, trees and shrubs of all kinds find a shelter and grow with a luxuriant profusion, which is the more gratifying as it forms an unexpected contrast with the general face of the country."—*The Antiquary*, ch. xvii.



First Bridge on the Tyne.

picturesque. The engraving opposite is copied from Palmer's "Tyne and its Tributaries." The contrast between this bridge and the High Level and the New Draw-bridge at Newcastle, the last two erected across the Tyne, is very great. Yet it is probable that this simple and rudely constructed bridge, could it have had an existence, would have been regarded with as much wonder and surprise, by the earliest people who roamed over the district, and who possessed no other implements than chipped flints, as the latter magnificent structures often are when viewed for the first time by rural people. Since the remote period of the early stone-age, in this district, and by the exercise of his intellectual faculties, man has slowly advanced into a higher order of being. Generally races of men by a greater adaptation to their surroundings have slowly supplanted the less gifted ones, and this progress is not yet ended. But even after the present high state of civilization was attained, what an expenditure of thought and what a vast amount of experience had to be gained on various subjects, at different periods, before the construction of the two last bridges over the Tyne was made possible!

The effect of trees in beautifying the landscape is very manifest at the bridge over the Tyne on the footpath between the Ashgill farm houses and the Tynehead School and Chapel. A portion of the Ashgill Liberty is situated on the west side of the Tyne, and the London Lead Company has planted both sides of the river. During a calm summer evening the scenery from this bridge looking down the Tyne is very fine. The rippling murmurs of the river flowing, between its grey and mossy banks, and over its blue bed of Tyne bottom limestone,—the balmy fragrance of the firs, and the rich blue of the sky where not obscured by light fleecy clouds, once observed cannot be forgotten. The lights and shadows of this peaceful scene which I sketched many years ago, is now a cherished memento of the past.

The appearance of the country would be greatly improved by planting groups of trees around the farm houses, and upon small patches of waste land. For this purpose no better deciduous tree can be selected than the plane tree, (Platanus occidentalis.) The timber, when full grown, is more valuable than oak. It is a noble tree and perfectly hardy in Alston Moor, except upon high and exposed situations ; it is, also,

valuable for shelter, which, in many places, is greatly needed.

It is remarkable that the finest water-falls in the district are situated on the East side of the Tyne River. This is probably due to the inclination of the strata. From the river the strata rise in a South West direction to the Great Sulphur vein, or opposite to the direction of the river. On the other side of the river they dip to the North East, consequently somewhat opposite to the direction of the minor streams. These conditions have had an influence on the denudation of the country during the great ice age.

There is only one water-fall on the Tyne. It is occasioned by the stratum of basalt, which is thrown up by the Great Sulphur vein. The erosion of the water is much less rapid upon the basalt than upon the softer rocks on the north side of the vein. There is another very similar fall in Cashburn due to the same cause. The High force on the Tees is due to the same stratum of basalt thrown up by the great fault which passes down the Tees valley, the bottom of the whin at these waterfalls does not

differ much in elevation. It is the highest at Tynehead and lowest at the High force.

The force in Clargill, Tynehead, is situated about 1500 feet above the sea. The quantity of water which falls over it is only small. It is, however, far more interesting than the one on the Tyne. It is a pleasant and picturesque place in summer. But on account of its high situation is seldom visited by lovers of wild scenery.

The waterfall in Ashgill burn is by far the most beautiful of the falls in the district. In 1853, the perpendicular fall of water was 66 feet. Since then a fall of limestone rock may have reduced the height of the perpendicular fall. The water falls on large blocks of limestone, which obstruct its passage to a lower position. It is precipitated over two minor falls, before it reaches the Tyne River. The effects of this fall are almost in exact accordance with Thomson's description of a cataract, in the Seasons, except in the volume of water.

During strong west winds the hoary mist is blown high above the fall, and when the sun shines the drops refract the light, and a beautiful rainbow circles the falling waters. Humboldt describes a similar

refraction of light on a grand scale occasioned by the fall of the Orinoco over the rocks of Manimi. "A foaming surface, several miles in length, intersected with iron-black masses of rock, projecting like battlemented ruins from the waters, is seen at one view. Every islet and every rock is adorned with luxuriant forest trees. A perpetual mist hovers over the watery mirror, and the summits of the lofty palms pierce through the clouds of vapoury spray. When the rays of the glowing evening sun are refracted in the humid atmosphere, an exquisite optical illusion is produced. Coloured bows appear, vanish, and reappear, while the ethereal picture dances, like an ignis fatuus, with every motion of the sportive breeze."*

The water which falls upon the higher grounds of Ashgill common is conducted into the Priorsdale reservoir, and from thence to the Nenthead Mining and Smelting works. This lessens the volume of water at the fall, and particularly so in a dry season. The top of the fall is about 1350 feet above the sea. The shale bed below the Scar Limestone is more rapidly wasted by frost and moisture than the limestone is

* Views of Nature, (Cataracts of the Orinoco.")

detached in blocks by the water which falls over it; in consequence, there is a passage behind the falling water. There is a similar one at Clargill force. Men have occasionally placed themselves under Ashgill force to obtain a shower bath.

The picturesque scenery connected with this waterfall has been affected adversely by the mining works which have been in operation at intervals during the present century. It has, however, been improved by the plantations on each side of the burn. It is an interesting and beautiful place during spring, summer and autumn. The 'air salubrious from the lofty hills,' the graceful ferns growing about detached rocks, the 'dewy fragrance' of the flowering plants and budding trees, and the 'music of the woods,' particularly in the spring, afford the purest and most unalloyed pleasure to a sensitive mind embued with a love of Nature.

There are two waterfalls in Garrigill Burn. One of them falls over the Four Fathoms Limestone, the other one falls over a stratum of sandstone above the Scar Limestone. This fall is not high, but the wooded rock scenery about it and above it is very fine. The force is about 1250 feet above the sea.

The force at Alston is too well known to need any description. It falls over the Scar Limestone at an elevation of about 900 feet above the sea. The water of the Nent is taken from above this fall to the mill which was built about the close of the last century. This mill has proved an unfortunate speculation to most of the owners who have had it in possession.

From the tops of the mountains at the head of the Tyne, the Wear and the Tees, scenes of grandeur and sublimity may be occasionally witnessed, which cannot be observed from lower situations. Wordsworth, in the Prelude, says that he once made an excursion to see the sun rise from the top of Snowdon. He describes the appearance of

> "The moon hung naked in a firmament
> Of azure without a cloud, and at my feet
> Rested a silent sea of hoary mist."

And hundred hills upheaved their dusky backs all over this still ocean. He goes on to describe this moonlight scene in its varied aspects, and then moralizes on its grandeur. He does not, however, describe the rising of the sun as it appeared on this lofty mountain. It may, however, be described

indirectly in some of his other poems, and perhaps in the passage in the Excursion, beginning with

> "What visionary powers of eye and soul
> In youth were mine; when stationed on the top
> Of some huge hill—expectant I beheld
> The sun rise up, from distant climes returned
> Darkness to chase and sleep."

In the summer season the vale of Eden is occasionally filled with mist to the height of 1700 feet above the sea. This only occurs under a bright unclouded sky and a calm atmosphere. When viewed from the top of Crossfell or Dunfell the surface of the mist presents a very bright billowy appearance in constant motion. It is very interesting to watch the appearance and disappearance of objects in the valley as the sun gradually dispels the mist. Mr. Hopes, of Croft Ends House, once told me that, many years ago, when riding from Troutbeck by the Knockergill pass, the country was filled with mist to the height of Dufton Pike. A cow which was standing on the top of the Pike appeared as if it were standing on the ocean of mist.

I remember forming one of a small party who left Garrigill, in the middle of June, 1839 or 40, to witness the dawn and the sun rise from the top of Crossfell.

We rested at Crossfell Smelt Mill, and left the horse and cart there, and before midnight walked to the top of the mountain and watched the dawn brighten up a perfectly unclouded sky. At the rising of the sun the sky still remained clear, there was not a cloud to throw a suffused light over the shadowed landscapes which were spread out in all directions; no sounds, nor even a breath of wind to disturb the deep repose; indeed, the effect produced on the observer by the rising of the sun under such circumstances is probably due to the absence of everything calculated to distract the attention, as the mountain tops, one after another, are lighted up with the sun's rays; and also to the great breadths of shadows which are constantly diminishing and assuming various forms as the sun rises into a higher position. Besides, to look down on the sun rising as it were out of the earth, produces an unusual sensation to dwellers in deep narrow valleys, accustomed to see it rise over the tops of lofty mountains.

In the morning the air is clear and free from vapour, and the interest of the observer is chiefly centred on the ever varying forms of the lights and shadows; but in the evening the vapours raised by

the heat of a summer sun are richly coloured, and when thrown across the path of the sun sinking towards the tops of the mountains of the Lake district, they tint both the valley of the Eden and the Pennine mountains, especially the latter, with varied colours creating scenes of surpassing splendour. I remember once crossing the mountains from Dufton to Garrigill on a Saturday evening in June. When the top of Knockergill pass was reached the sun had partially set in the deep valleys on the east side of the Pennine mountains, though still a few degrees above the tops of the mountains of the Lake District. From this elevated and distant place, the vale of Eden presented the appearance of a vast garden, tinted with hues of crimson rosy-red, purple and gold, occasioned by the light passing through the richly coloured clouds, which lay tranquilly in thin streaks across the path of the sinking sun. The forms of these beautiful patches of coloured light scattered over the wide landscape were constantly changing or disappearing; as the shadows advanced from the hills they

"Floated away like a departing dream."

The contrast between this beautiful scenery and the bleak and barren country of the upper Tees

enveloped in the shadows of evening, is, under such circumstances, very striking. The balmy air was undisturbed by the slightest breeze, not a sound reached the ear except the faint gurgling of a spring issuing from a fissure in the limestone rocks below. In the valleys sounds from various sources reach the ear, without our being conscious of them; but their absence in such a state of the atmosphere, and at positions so elevated and far away from the habitations of men, produces a soothing, yet pensive, state of mind arising from

> "A sense of something wanting, incomplete,
> Not to be put in words."

The aspects of nature upon these lofty mountains are greatly changed, in the winter season, by the gloomy grey skies, or by the damp, misty or foggy atmosphere. A journey over these mountains during a storm of wind and snow, once experienced is never forgotten. I have occasionally ridden over the wildest part of the Pennine mountains when it was impossible to see the path more than a few yards on account of the falling and drifting snow. Not only is there much hardship to encounter in a journey under these circumstances; but also a considerable amount of

anxiety exists lest the road should become impassable before the low lands are reached.

Though the winters are long and often severe, there are days in Summer which are very oppressive from a combination of radiated heat from the hills and the glowing sunshine. A gentleman once stated to me that he found the heat at Nenthead more oppressive than he ever felt it in the West Indies, where he had resided several years. Perhaps much of the lassitude produced is due to the rarefaction of the atmosphere in elevated situations, which makes it less bracing than air heated even to an higher temperature in lower situations.

The inhabitants of these valleys are hospitable and kind, and are greatly attached to their native hills. Those who have emigrated into the towns in search of employment, or to better their circumstances in distant continents, will, in the evening of life, often recall to memory its morning spent in the vales of South Tynedale, and like Robert Browning's Paracelsus, the varied events of those early days will drift by them; and should they individually select

"Some especial epoch from the crowd 'tis but
To will, and straight the rest dissolve away;
And only that particular state is present
With all the long forgotten circumstance
Distinct and vivid as at first."

APPENDIX I.

A list of Methodist preachers who have been stationed in Alston Moor. Until 1807 Alston formed a portion of the Hexham Circuit.

R. Swan, 1788; Franklin, 1789; Myles, 1790; Morley, 1791; Ramshaw, 1792; Ramshaw and Barrit, 1793; W. Hunter and Hainsworth, 1794-5-6; Samuel Bardsley and Sunnycloff, 1797-8; John Ward, 1799; John Ward and J. Jackson, 1800; G. Holder and Mercer, 1801-2; T. Harrison and Etchsels, 1803; T. Harrison and Owen, 1804; G. Douglas and Todd, 1805-6; *W. Beswick and Garbutt, 1807; T. Gill and S. Brown, 1808; T. Gill and John Lee, 1809-10; J. Hopewell and E. Batty, 1811; R. Harrison and E. Batty, 1812; J. Bumstead and J. Miller, 1813; J. Bumstead and Ratcliff, 1814; R. Nicholson and Ratcliff, 1815; W. Scholefield, 1817; W. Scholefield and A. Freeman, 1818; Adshead and A. Freeman, 1819; Haywood, 1820; John Walton, 1821-2; G. Clark, 1823; G. Clark and R. Totterwick, 1824; E. Clark and S. Tindale, 1825; G. Douglas and T. Dunn, 1826; G. Douglas and J. Bolam, 1827; T. Key and S. Thompson, 1828-9; W. Noother and R. Allan, 1830; John Lee and R. Allan, 1831; T. Catterick and James Lemon, 1832; T. Catterick and J. Hide, 1833; Luke Heywood and R. Cook, 1834; Luke Heywood and G. Poole, 1835; J. Jackson and T. Hays, 1836-7; H. Stevenson and Paul Clark, 1838-9; A. Freeman and John Crawshaw, 1840; A. Freeman and W. Jewitt, 1841; Benjamin Hudson and John Cannon, 1842-3; W. Tranter and S. Bowman, 1844; W. Tranter, N. Alston, and R. A. Gent, 1845; T. Walker, S. Lucas, and J. Roberts, 1846.† T. Walker and J. Roberts, 1847; H. Dean and J. Roberts, 1848; H. Dean and W. Shaw, 1849; T. Ballingall and W. Shaw, 1850; T. Savage and W. Battie, 1851; T. Savage and G. Lough, 1852; T. Savage and J. Reacher, 1853; T. Burrows and W. Jackson, 1854; T. Burrows and J. Broadbent, 1855; C. Currelley and J. Broadbent, 1856: P. Wilkinson and W. Maltby, 1857-8; J. Barrowclough and W. Maltby, 1859; J. Barrowclough and W. Kidman, 1860; T. Brown and G. Diton, 1861; G. Diton and D. Jones, 1862; C. H. Chambers and D. Jones, 1863; W. Satchell and D. Jones, 1864; W. Satchell and J. Wilson, 1865; W. Satchell, J. Wilson, and Neill, 1866; J. Newton and Brown, 1867; J. Newton and Bennett and R. Crozier, 1868; J. Newton, Bennett, and Hepplewhite, 1869; T. Cannell, Bennett, and Hepplewhite, 1870; T. Cannell, C. Maughan and John Watson, 1871-2; T. Pears, Saul, L. H. Parks, 1873; R. Cass, Saul, and R. Cleminson, 1874-5; R. Cass, S. Tolliday, W. Coudall, 1876; T. McCartney, Winter, and T. Nicholson, 1877; T. McCartney, Winter and Pallister, 1878; T. McCartney, Sutton and Pallister, 1879; H. Bunting, Sutton and Shovelton, 1880-1;‡ A. Bunting and Shovelton, 1882; T. Seed and T. Hitchon, 1883; T. Seed and Sugden, 1884-5; Fern and H. Sugden, 1886.

* Alston made into a Circuit which included Haltwhistle and the Allendales.
† Allendale made into a Circuit. ‡ Haltwhistle made into a Circuit.

APPENDIX II.

Lessees of the Mines in the Alston Manor before it was settled on the Greenwich Hospital.

Thomas Errington, Esq., of Beaufort; Lough Vein, Guddamgill, Peatstack Hill, Briggle burn, Thorngill and Goangill, Browngill Moss and Dodberry Dyke head.

Enoch Hudson, do. do. do. do.

The Quaker Company, Blaygill, Browngill, and Thotergill.

Mr. Alderman Ridley, Nentsberry Middle vein, Middle Syke, Brownly Hill and Haggs.

Mr. Bacon, Greengill, Browngill.

John Jackson, Farenbury, Park Grove and Slate Mea

Thomas Atch [Atkinson], Redgroves Nattrass.

Mr. Stephenson, of Cross Lands; Dowpott syke.

Sam White, Fletcheras and Scar Ends.

Mr. Rogers, of Newcastle; Thotergill, and Redgroves [Rampgill].

Mr. John Aindey, Hill close, and Goodamgill Moss.

William Lee, Rock Hill.

William Hewetson, Horse Edge.

Jno. Graham, and Jno. Richardson, Gill House burn

Thomas Burne, Birchy Bank.

Henry Featherstone, High Birchy Bank.

Sir John Myers, Howburn Moss, Carrs, Long Cleugh, and Fletcheras and Cowslitts.

Thomas Brown, Cash burn, Birchy Bank.

Mr. Mowbray, Corn Riggs.

George Errington, Crossgill Head.

John Watson, Green Crag.

Jno. Forster, Gate Castle. Some copper ore found.

Jno. Carrick, Dryburn.

Mr. Ainesly, Longholehead, Thotergill, Haggs, Brownly Hill and Redgroves [Rampgill].

Mr. Ainesly, Dr. Hutchinson, and Watson, do., etc.

Mr. Tinzwood, Fairhill, Nenthead.

A list of the mines which were advertised to be let by the Greenwich Hospital, and proposals received on the 24th August, 1736.

	Washers.		Miners.
Peat Stack Hill—G. Liddle, Mr. Mulcaster, Thomas Yeats, each $\frac{1}{4}$th, Wm. Empson, $\frac{3}{9}$th, Mr. Haley and Barnfather	4	—	20
Brighill Burn—G. Liddle and Barnfather ..	0	—	4
Greengill—G. Liddle and Barnfather	2	—	8
Thorngill—G. Liddle, Thomas Yeats, $\frac{1}{4}$th, Wm. Smith and Co.	2	—	10
Lough Vein—G. Liddle	0	—	6
Redgroves or Rampgill—G. Liddle, Quakers, J. Anesley and Dr. Hutchinson, of Carlisle ..	4	—	20
Thotergill—G. Liddle, Quakers	0	—	6
Browngill—G. Liddle, Quakers, G. Mowbray ..	0	—	6
Longholehead—G. Liddle, Wm. Todd, Wm. Haley, Mr. Mowbray, Ridley, Cooper and Thornbury	3	—	12
Clargill Cleugh—G. Liddle	0	—	0
Blaygill or Fistas Rake—G. Liddle, Quakers, Bowman, Smith and Muncaster, (now employed) ..	4	—	20
Redgroves Nattras—G. Liddle, Wm. Todd and Yeats	0	—	6
Benty Field—G. Liddle	0	—	6
Fairhill—G. Liddle and Mr. Hales	0	—	6
Brigghill Burn Cross Vein—G. Liddle and Mr. Thornbury	0	—	6
Fletcheras—G. Liddle, Thomas Haley, Esq., Samuel White	0	—	6
Guttergill—Wm. Todd, $\frac{1}{6}$th, Dan. Wren, $\frac{1}{6}$th ..	0	—	4
High Craig—Wm. Todd, $\frac{1}{5}$th	0	—	4
Nunnery Top Vein—Samuel White, $\frac{1}{5}$th	0	—	4
Haggs—J. Aynesley, $\frac{1}{5}$th	0	—	4
Paddock Vein—Joshua Archer, $\frac{1}{5}$th	0	—	4
Carrs and Cowslitts—Hodgson, Hall, Whitfield and Haley			
Wellgill Syke—Moor and Gilpin			
Cornriggs—Mowbery			
Long Cleugh—Emerson and Hall			
Nentsberry Haggs—Harrison			
High Nentsberry Haggs—W. Todd			
Cash burn—Thomas Brown			
Black stone—Dr. Hutchinson and Watson ..			
Clargill Cleugh—C. Liddle			
Windy Brow—Quakers			

APPENDIX III.

The drawing opposite the 210th page of Mr. Forster's Section of the Strata is altogether inaccurate. The Cross Vein passes through Scaleburn Vein, and is not shifted in any direction. The drawing showing Patterdale Cross Vein and Rampgill Vein is equally erroneous; and the one showing the intersections of Middle Cleugh and Long Cleugh Veins, with Small Cleugh Cross Vein is also very inaccurate. It is probable that more accurate information could not be obtained in 1821, the date of the second edition of Mr. Forster's book. Since that period the mines have been more effectually opened out, and more light has been thrown on the effect of the previously existent Cross Veins on the formation of the East and West Veins. The plan opposite to page 81 of the Laws which Regulate the deposition of lead ore in veins, was constructed from repeated surveys made with the best instruments. All the plotting was tested by mathematical calculations, and the slight errors eliminated by the reduction of the surveys to triangles The facts shown upon the plan may therefore be depended upon as being almost absolutely correct. The changes effected on the East and West Veins at the intersections are very remarkable, and worthy of careful study. Between the two portions of Carr's Vein, Long Cleugh Vein does not exist. The position of the East and West Veins in the Slate Sills in relation to their position in the Great Limestone is also very remarkable. The total amount of dislocation of the Strata of these East and West Veins is only a fraction of the throw of the Vein at Longholehead. This is the necessary result of the breaking up of this great Vein as it approaches its termination, before reaching the Kilhope axis of elevation.

APPENDIX IV.

The disbelief in the possibility of the metals being compound substances is gradually giving way. At the present time (1886), Mr. Lockyer has a work in the press on the chemistry of the sun, in which it will be attempted to prove, from experiments made with the spectrocope, that the so-called simple elements are compound substances. A theory that all the simple substances, or all the metalliferous substances we now possess are elaborated by natural processes out of one substance called prolyte, or the first substance, has been recently advocated by Mr. Crookes. Faraday was inclined to believe in the unity of matter as well as of force, and, therefore, probable transmutation of the elements. Thus he says "to decompose the metals, then reform them to change them from one to another and to realise the once absurd notion of transmutation are the problems now given to the chymist for solution." Although this was a conjecture of his youth, yet it appears to have held possession of his mind in after life, as may be inferred from the announcement of his ideas on what he terms centre of force, which he published many years before his decease.* Oersted held the same opinion. "If we investigate the peculiarities to which matter is subject in each individual body, we perceive that these peculiarities rest upon laws of nature, by which laws the effects are produced. Our investigation is indeed arrested before certain materials, which, for the present, we must consider simple elements; but science leaves no doubt that this is a mere passing idea."†

The belief that our analyses have reached the ultimate particles of matter has occasioned the deeply rooted idea in many minds that metals have been brought near the surface by emanations from great depths where they are assumed to exist. This idea receives no support from facts. In the numerous analyses of thermal springs and their gaseous contents, given by Dr. Daubeny, gold, silver, copper, lead, &c., do not occur in either state, nor are the regions of long extinct volcanoes or those of recent action noted as places where the metals are found in their greatest abundance; but rather for their absence. But even on the supposition that fissures formed by earthquakes and volcanoes were filled with metals by deep seated emana-

* Life and letters by Dr. Jones, Vol. I., Page 257.

† Soul in Nature, Page 88.

tions it would only prove that their presence in veins of the carboniferous rocks, and in the fissures of volcanic origin, resulted from a plurality of causes. The facts connected with the fissures could afford no explanation of the facts connected with the deposits in veins in the carboniferous rocks. The fundamental ones are clearly atmospheric agency and the character of the enclosing rock. There is comparatively little in the productions of nature that chemists can produce in their laboratories. They have formed minerals of various kinds from the substances they are composed of; but as yet, Nature's modes of operation are little known. That metals are to be considered elementary substances, simply because chemists are unable to decompose them, is an inconsequent conclusion, will clearly appear when presented in the form of a paralogism.

All substances that cannot be decomposed in the Chemist's laboratory, are simple substances.

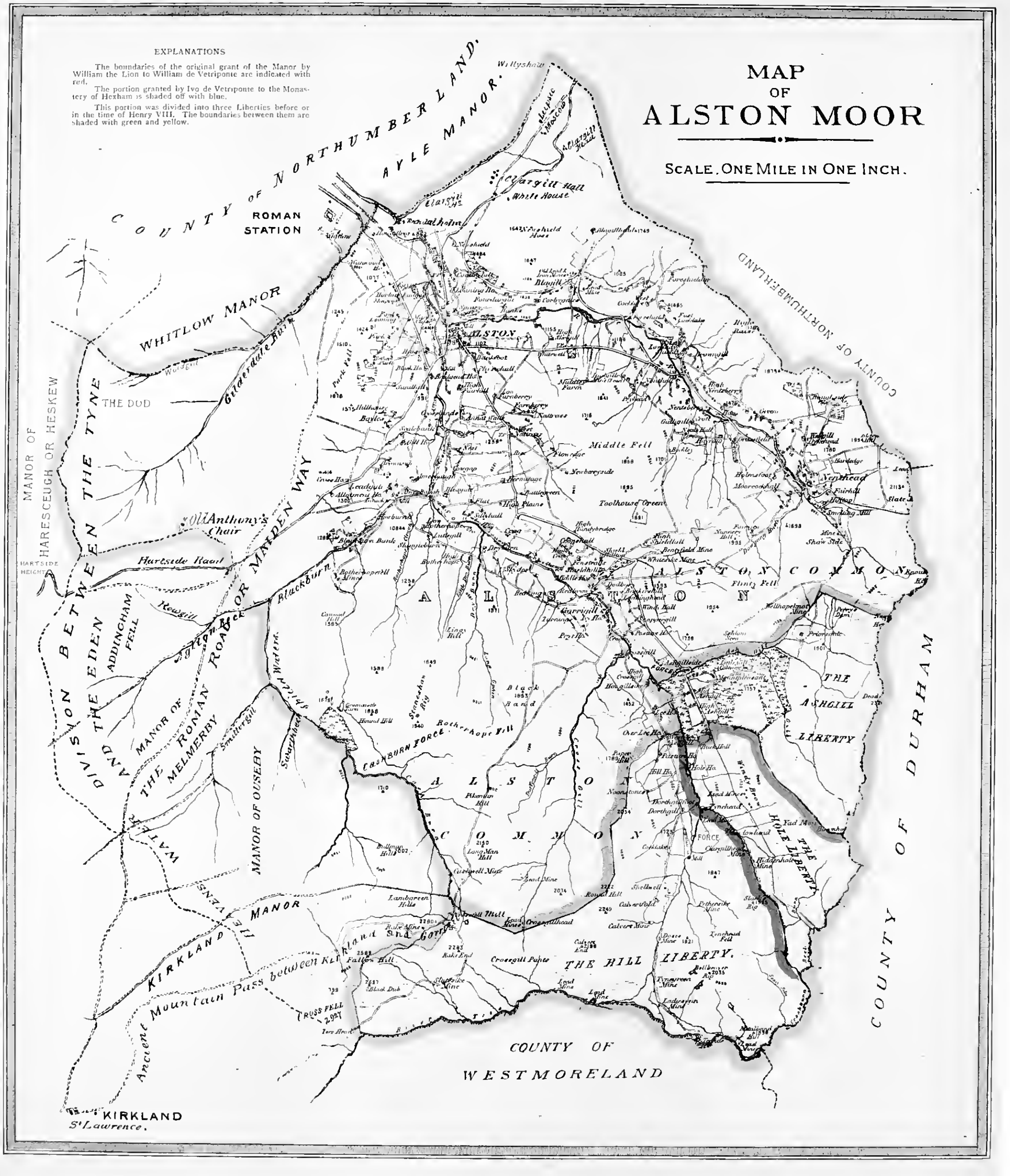
Lead, Copper, Zinc, &c., cannot be decomposed in the Chemist's laboratory.

Therefore, Lead, Copper, Zinc, &c., cannot be decomposed in Nature's laboratory.

Few chemists have the opportunity of studying the phenomena connected with mineral veins, as they are slowly explored. This probably accounts for the backward state of our knowledge of the origin of metals, *Natura enim non nisi parendo vincitur.*

APPENDIX V.

It is probable that the deposit of metallic ores is due to a plurality of causes. In veins the conditions may vary to some extent, but in all cases the chemical forces employed by Nature are probably not much different when the deposits are first made; though, from subsequent geological changes, forces of decomposition may be brought into action, and the recomposition of the metals originally deposited with a variety of substances may complicate the results greatly. At Metternich there is a sandstone with lead ore diffused through the rock. The proportion of lead to the sandstone is about 1 in 40. A few years ago, an excavation had been made in this sandstone 1000 feet long, 400 feet wide, and 300 feet deep, and the value of the lead raised per year at present prices is about £300,000. Ten square miles of this formation contain lead to the value of our national debt. It is difficult to conceive of such a vast quantity of lead being derived from any source and mixed uniformly with the sandstone when it was spread out by the action of the sea water; and I am inclined to suppose that it is the result of chemical changes effected in what originally was a very porous sandstone. The copper mines of Mansfeld, in Prussia, are similar to the above. The copper and a little silver are not found in veins, but in a bed of schist or slaty shale, only four inches in thickness, which forms a portion of the new red sandstone. The proportion of copper is only three per cent of the thin bed of schist, and equals a sheet of pure copper $\frac{1}{33}$ of an inch in thickness. It is said there is an area of 150 square miles of this thin copper bed in one basin. If this be correct the quantity of copper in the basin is not less than 2,600,000 tons. The mines are 200 fathoms deep, and about 13,000 men and boys are employed in working them. The value of the copper obtained yearly is about £1,100,000.


EXPLANATIONS
The boundaries of the original grant of the Manor by William the Lion to William de Vetriponte are indicated with red.
The portion granted by Ivo de Vetriponte to the Monastery of Hexham is shaded off with blue.
This portion was divided into three Liberties before or in the time of Henry VIII. The boundaries between them are shaded with green and yellow.
MAP OF ALSTON MOOR
SCALE. ONE MILE IN ONE INCH.
COUNTY OF NORTHUMBERLAND.
AYLE MANOR.
ROMAN STATION
WHITLOW MANOR
THE DUD
MANOR OF HARESCEUGH OR HESKEW
HARTSIDE HEIGHT
DIVISION BETWEEN THE TYNE AND THE EDEN WATERS
ADDINGHAM FELL
MANOR OF THE MELMERBY
THE ROMAN ROAD OR MAIDEN WAY
MANOR OF OUSEBY
KIRKLAND MANOR
Ancient Mountain Pass between Kirkland and Gorrill
CROSS FELL 2927
KIRKLAND
St Lawrence.
ALSTON
Middle Fell
Toolhouse Green
Nenthead
ALSTON COMMON
ALSTON COMMON
THE ASHGILL LIBERTY
THE HOLE LIBERTY
THE HILL LIBERTY.
COUNTY OF NORTHUMBERLAND
COUNTY OF DURHAM
COUNTY OF WESTMORELAND